# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1a 5 3, Edition

En

estoil-ISO 4113

VA 6/100 H 1700 CR 119 CR 119-1

0 460 306 108 0 460 306 109

1.6 Full-load speed regulation

supersed 4:2.82 company Hanomag engine D 161 L

Pre-stroke setting 0.3 mm  $\pm$  0.02 ( $\pm$  0.04) Setting of the pointer at a stroke of 1 mm in

1800

Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

All test specifications are valid for

relation to outlet "A". Pre-setting see reverse side Difference in delivery cm<sup>3</sup> **Settings** Charge air press 1. Settings kp/cm<sup>2</sup> 4, 3-5, 1 1500 1.1 Timing device travel 6,3-6,8 1500 kp/cm<sup>2</sup> 12 Supply pump pressure 2.5 1200 49,0-50,0 cm<sup>3</sup>/1000 strokes 1.3 Full-load delivery without charge air pressure cm<sup>3</sup>/1000 strokes Full load delivery with charge-air 3,0 12,0-18,0 300 cm<sup>3</sup>/1000 strokes 1.4 Idle speed regulation 100 mind. 60,0 cm<sup>3</sup>/1000 strokes

26,0-34,0

cm<sup>3</sup>/1000 strokes

2. Test Sp	ecificatio		ess in brackets				
2.1 Timing device	rev/min	650-810(620-	840)	1500	1550-1700		
	mm	Beginn		(4,0-5,4)	5, 2-5, 9(4, 9-6, 2)		
22 Supply pump	rev/min	200		1500	1700		
	kp/cm²	1,2-1,7(1,6-	1,9)	(6,1-7,0)	7,0-7,5(6,8-7,7)		
Overflow delivery	rev/min	500			1700		
	cm³/10 s	55-100(40-1	10)		55-100(40-110)		
23 Fuel deliveries	<del> </del>						
Speed control lever	Delivery lever	rev/min	cm³/1000 stroke	s	Charge air pressure kp/cm²		
End stop	Full	1880-1960 (1860-1980) 1800 1700 1200 500		(25,0-35,0) (41,0-46,0) (48,5-50,5) (38,0-44,0)			
	Stop	1700	0				
idle stop	Full	450-500 (430-520) 100	0 mind. 60, 0				
End stop	Start	150-250					

Angle to the stop plate	Pre-setting dimensions
Pump  (1 = 25 ± 4°  (3 = 55 ± 8°  (4 = 30 - 8°  (5 = 60 + 8°)	Pump Dimension Iv 4,0 mm Dimension v 24,6 mm

WPP 001/4 CIT 2,1c 6 Edition

Testoil - ISO 4113

VA 4/90 H 2250 CR 171-2 0 460 394 024

supersetes 82 Citroen CRD 90

Pre-stroke setting

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers Test Intructions and Test Equipment

**VDT-WPP 161/4 B** Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge air press kp/cm²	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1400	4,3-4,7	mm		
1.2 Supply pump pressure	1400	4,4-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1250	36,0-37,0	cm³/1000 strokes		1,5
Full-load delivery with charge-air			cm <sup>3</sup> /1000 strokes		
pressure  1 4 Idle speed regulation	350	9,5-15,5	cm <sup>3</sup> /1000 strokes		2,0
1 5 Start	100	mind.58,0	cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	2400	12,0-18,0	cm³/1000 strokes		

2.1 Timing device	rev/min	700	1400 1800	2050-2200
	mm	0,8-1,8(0,5-2,1) (	1,0-5,0) 5,8-7,8(5	5,5-8,1) 7,0-7,7(6,7-8,0)
2 2 Supply pump	rev/min	200	1400	2250
	kp/cm²	1,0-1,5(0,8-1,7)	(4, 2-5, 1)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500		2250
oremon deniery	cm <sup>1</sup> /10 s	55-100(40-110)		55-100(40-110)

23	Fuel	delı	veries
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20 / 20 / 30 // 50 // 50				•
Speed control lever	Delivery lever	rev/min	cm <sup>1</sup> /1000 strokes	Charge air pressure kp/cm?
End stop	Full	2500-2600 (2480-2620) 2400 2250 1250 600	0 (11,0-19,0) 33,0-35,0 (32,0-36,0) (35,0-38,0) 30,0-33,0 (29,0-34,0)	
	Stop	2250	0	
Idle stop	Full	360-430 (340-450) 350	(8,5-16,5)	
End stop	Start	100 150-250	mind.58,0	·

Angle to the stop-plate	Pre-setting dimensions
Pump  " = 25 ± 4°  " = 55 ± 8°  " = 30 - 8°  " = 60 + 8°	Pump Dimension IV= 1,6 mm Dimension V = 24,6 mm

# Spring preload force

For shutoff stroke 1.5 mm = 4.5 NmFor shutoff stroke 0.6 mm = 8.5 Nm ·1· ~

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# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 L 1

1. Edition

VE 4/10 F 2075 R 131 DHK: 1 688 901 022 0 460 404 032

supersedes Peugeot

Test pressure de pressure line 6x2x450/1 680 750 073

Overflow temperature 45° C

engine: XD 2 S

All test specifications are valid only for Boach Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1250	2,1-2,5	mm	0,8	
1.2 Supply-pump pressure	1250	3,7-4,3	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	1250	48,2-49,2	cm <sup>3</sup> /1000 strokes	0,8	2,5 (3,0)
charge-air pressure Full-load delivery without	500	39,5-40,5	cm³/1000 strokes	0	
charge air pressure	400	13,0-17,0	cm³/1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2350	20,0-26,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 50	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing					

21 Timing device LDA=0,8 bar	n = rev/min	*500 800 0,8-1,4(0,	125 ,4-1,8) (1,6-		1750 2000 ,4(4,3-5,7) 6,9-7,7(6,6-8			
2.2 Supply pump LDA= 0,8 bar	n = rev/min bar (kgf/cm²)	200 0,7-1,3			2000 7,5-8,1			
Overflow delivery	n = rev/min cm³/10 s	500 ( 55-138 (4	0 bar) 10-153)	2000 (0,8 bar) 55-138 (40-153)				
2.3 Fuel deliveries  Speed control lever	Rot.speed	] Fuel delivery		Charge-air press.	3. Dimen	SIONS tor assembly and adjustment		
End stop	2550 2350 2250 2000 1250 * 750 500	max. 7,0 32,0-40,0 47,5-49,5 46,5-47,5	(19,0-27,0) (32,0-40,0) (46,3-50,7) (46,5-50,9) (44,0-50,0) (37,0-43,0)	0,8 0,8 0,8 0,25	K KF MS SVS	3,2-3,4 5,7-5,9 0,9-1,1 2,3		
switch-off  Idle stop  End stop	400 500 675 380 480	max. 4,0 min. 8,0 min. 47 max. 45	(11,0-19,0)		Observations  Please note instructions on sheet 2.			
2.4 Solenoid	max. cut-in volta	• xxx min.	10 V					

\* LDA-stroke 4,5 mm

Use adjusting nut (46) to correct.

At n=500 1/min and with cold-start accelerator solenoid deenergized timing device travel = 1,0 - 3,0 mm

# **Test Specifications** Distributor-type Fuel-injection Pumps

1. Edition

VE 4/10 F 2125 R 131-1 DHK: 1 688 901 022

0 460 404 033

supersedes company: Peugeot XD 2 S

WPP 001/4 PEU 2.3 L

Test pressure de pressure line 6x2x450/1 680 750 073

Overflow temperature 45° C

Test Instructions and Test Equipment

Pre-stroke setting

Testoil-130 414

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

see VDT-W-480/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
A A The Lead device Assurt	1250	2,1-2,5	mm	8,0	
1.1 Timing device travel	1250	3,7-4,3	bar (kgf/cm²)	0,8	
1.2 Supply-pump pressure	1250	48,2-49,2	cm <sup>3</sup> /1000 strokes	8,0	2,5 (3,0)
1.3 Full-load delivery with charge-air pressure	500	39,5-40,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure  1.4 Idle regulation	400	13,0-17,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2400	20,0-26,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 50	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Spe	cifications	checking values in brackets (	)		
2 1 Timing device DA=0,8 bar	n = rev/min mm	*500 800 0,8-1,4(0,4-1,8) (	1250 175 1,6-3,0) 4,6-5,4		2000 ,9-7,7(6,6-8,
2.2 Supply pump DA=0,8 bar	n = rev/min bar (kgf/cm²)	200 0,7-1,3		2000 7,5-8,	1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 (0 bar) 55-138(40-153)	2000 (0 55-138(4	,8 bar) 0-153)	
2.3 Fuel deliveries				3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	484111
End stop	2600 2400 2300 2000 1250 * 750 500	max. 7,0 (19,0-27 32,0-40,0 (32,0-40 47,5-49,5 (46,3-50 (45,5-50 46,5-47,5 (44,0-50 (37,0-43	,7) 0,8 ,9) 0,8 ,0) 0,35	K KF MS SVS	3,2-3,4 5,7-5,9 0,9-1,1 2,3
switch-off				8	
idle stop	400 500 675 380	(11,0-19 max. 4,0 min. 8,0 min. 47	,0)	Please note instructions on sheet 2.	
2.4 Solenoid	max. cut in volta	max. 45  9 xxx min. 10 V rated voltage 12V.			

**BOSCH** 

\* LDA-stroke 4,5 mm

Use adjusting nut (46) to correct.

At n=500 1/min and with cold-start accelerator solenoid deenergized timing device travel = 1,0 - 3,0 mm

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 3,9 y 2. Edition

VE 4/11 F 1150 R 140 0 460 414 009 DHK 1 688 901 020

Overflow temperature 45° C

supersed 12.83
company HC
engine: DT 239/856

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	800	4,5- 4,9	mm	0,8	
1.2 Supply-pump pressure	800	5,3- 5,9	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	800	92,2-93,2	cm <sup>3</sup> /1000 strokes	0,8	3,5 (4,0)
charge-air pressure Full-load delivery without	500	76,0-77,0	cm³/1000 strokes	0	
charge-air pressure	350	23,0-27,0	cm³/1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	1250	42,0-48,0	cm³/1000 etrokes	0,8	
1 6 Start	100	min. 100	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	_	-			

2. Test Spec	ifications	checking values in brackets (	)	
2.1 Timing device LDA = 0,8 bar	n = rev/min mm	400 0,8-1,6 (0,5-1,9)	800 (4,0-5,4)	1150 5,3-6,1 (5,0-6,4)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm²)	400 3,7-4,3		1150 6,4-7,0
Overflow delivery	n = rev/min cm³/10 s	500 55-138 (40-153)		1150 (0,8 bar) 55-138 (40-153)
2 3 Fuel deliveries	1			3. Dimensions

	cm <sup>3</sup> /10 s	55-138 (40-153)	
2 3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery Charge-air p cm³/1000 strokes bar (kgt/cm²	
End stop	1300 1270 1250 1130 800 800 * 500	max. 2,5 min. 2,5 (40,5-49,5) 85,4-88,4 (84,2-89,6) (90,0-95,4) 87,9-88,9 (85,7-91,1) 82,5-85,5 (80,6-87,4) (73,1-79,9)	
switch-off			
idle stop End stop	350 400 450 220 300	(20,5-29,5) 5,0-11,0 (3,5-12,5) max. 3,0 min. 100 max. 80	C
2.4 Solenoid	max. cut-in volt	AAA 111111 10 1	

3. Dimens	tor assembly
Designation	and adjustment mm
K KF	5,2-5,4
MS	1,2-1,4
svs	5,0
^xĸ	20,2-22,2
S XL	12,3-15,7
Observations *	

compensator stroke = 4,5 mmCorrection at the adjusting nut. (46)

Manifold-pressure

Testcil-ISO 41

WPP 001/4 HOR 2,0 b

5. Edition

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PES 2 A 80D 410/3 RS 1329 Komb.-Nr. O 400 462 053 RSV 400-1250 AOB 1123 L AOC 1123 L supersede 6.83
company Holder
engine VD 6001/2

Port closing difference between control-rod travel 9 and max.  $= 9 - 9.9^{\circ}$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke / 1

1,7-1,8 (1,65-1,85)

mm (from BDB) =7,5-10,5mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rey/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1250	9,7-9,8	6,0-6,1	0,2 (0,3	5)		
400	6,7-6,9	0,9-1,5	0,2 (0,3			
		ļ	}		Ì	
		i				
						1

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lower	rated spe		3 Tor	que control
Degree of deflection of control	1	Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		Control rod travel
lever	rev/min	mm	lever	rev/min	mm	lever	rcv/min	mm ·	tea/win	[աա
l,	L	3	4	5	6	7	8	9	10	11
loose	700 X = 3	0,3-1,0 ,75		-	•	ca. 20	100	6,3 min 19,5		•
	·	<u> </u>	ļ			1	400	6,7-6,9	ł	ŀ
ca.46	8,7	1290-1300	•				505- 	565= 2,0	}	
lo		1330-1360								
<u>i</u>	1495	0,3-1,7	<u> </u>				<u> </u>	<u> </u>	<u> </u>	<del></del>

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Fuli-lo	2) Full-load stop 6 Rotational- speed limitat			el delivery practeristics	Starting Idle	fuel delivery	(5a) Idle stop		
rest oil tem ev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
1250	59,5-60,5 (58,0-62,0)	1290-1300*		•	•	-	-		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MWM 3,1 c 1. Edition

supersedes\_

company MVM

D 226-3, 916-3

**Testoil-ISO 4113** 

PES 3 A 80 D 320/3 RS 1331 RSV 325-1500 A 2 B 505 DR

Komb.-Nr. 0 400 463 137 1 - 2 - 3 je 120° - 0,5 (- 0,75)

Port closing difference between control-rod travel 9 and max.  $= 3,5-4,5^{\circ}$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

2,2 - 2,3

Port closing at pres	itroke	(2.15-2.35)	mm (from BD	<i>l</i> =9,0-12	,O mm	
Rotational speed	Control rod travel	Fuel delivery		Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control va/va)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1480	9,0-9,1	4,8+4,9	0,25(0,4	)		
325	7,4-7,6	0,9 - 1,5	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in [

## **B.** Governor Settings

Upper Degree of deflection of control tever	rated speed rev/min 2	Control rod travel mm	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	4 Lowe Degree of deflection of control lever	rated spe rev/min 8	ced Control rod travel mm 9	3 Torrev/min	control Control rod travel mm
loose	800 x =	0,3-1,0 3,5	-	•	-	ca.57	325	5,5		<u> </u>
ca. 18,5	<del>,</del>	1530-1540 1570-1600 0,3-1,7	:		·		100 325 410-4	min.19,0 5,9-6,1 70=2,0mm		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	2) Full-load stop  (6) Rotational-speed limitat.			el delivery aracteristics	Starting Idle	fuel delivery	(5a) Idle stop	
Test oil tem rev/min	p. 40°C (104°F) cm³/1000 strokes	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1480	48,0 - 49,0 (46,5 - 50,5)	1530-1540 *	-	-	100	90,0-106, (87,0-109, bei RW=19, - 21,0 mm	) )	
		۲			325	9,5 - 15,5		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 HOR 2,4 a 3. Edition

Festoil-ISO 411

PES 3 A 80 D 410/3 RS 1336

RSV 400-1250 AOB 1123 L

AOC 1123 L

supersede 1.82 company Holder VD 6001-4

engine

Schlepper A 60

Komb.-Nr. 0 400 463 144 1 - 2 - 3 je 120° - 0,5° (- 0,75°)

Port closing difference between control-rod travel

9 and max. = 9 - 10 $^{\circ}$  All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings
1,7 - 1,8
(1,65-1,85) mr

mm (from BDC)

RW 9 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
1230	11,0+0,1	7,0 - 7,1	0,2(0,35			
400	7,9-8,1	0,9 - 1,5	0,2(0,3)			
				<u></u>	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
t	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0		-	-	ca.24	400	7,5	_	-
10036	Χ :	4,25	<u> </u>					min.19,0		
ça. 48	10,0 4,0 1500	1270-1280 1335-1365 0,3-1,7						10=2,0mm		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat.		3a) Fuel delivery characteristics		fuel delivery	5a Idle stop	
Test oil tem rev/min t	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1230	70,0 - 71,0 (68,5 - 72,5)	1270-1280 *	-	-	100	19,5-21,0 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISC 4113

# Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 MWM 2,1 b
3. Edition

En

PES 2 A 80 D 320 RS 1337 Komb.-Nr. 0 400 472 044

RSV 300-1000 A7B 505-1R

supersedes 82 company MWM engine D 226-2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,2 - 2,3 Port closing at prestroke (2,15 - 2,35

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
980	9,7-9,8	4,8-4,9	0,25(0,4			
300	7,2-7,4	1,0 - 1,6	0,2 (0,35			
				ļ		
	1	i	l l			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 To:	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca.27	300	5,5	-	•
.5550	X =	6,0					100 300	min.19,0 5,9-6,1		
ca. 66	8,7 4,0 1205	1020-1030 1050-1080 0,3-1,7	<u> </u>				<b>B50-41</b>			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full+o	ed stop	6 Rotational- speed limitat.		et delivery tracteristics	Starting Idle	fuel delivery		
Test oil temp revimin 1	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
980	48,0- 49,0 (46,5-50,5)	1020-1030*	•	•	100	88,5-104,5 (85,5-107,5 - 19,5 - 21,0 mm RW	)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MWM 3,1a 4. Edition

PES 3 A 80 D 320 RS 1338

RSV 300-1000 A 7 B 505-1R

supersede 0.83 company: MWM

Komb.-Nr. 0 400 473 086

D 226-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	itroke	(2,25-2,35)	mm (from BDC)			
Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
980	9,7-9,8	4,8-4,9	0,25(0,4			
300	7,4-7,6	0,8-1,4	0,2(0,35			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper	rated speed	<del></del>	Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 Tor	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.25	300	7,0	-	-
	X = (	,0					100 300	min.19,5		
62	8,7 4,0 1205	1020-1030 1050-1080 0,3-1,7						450=2,0		_

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-	oad stop	8 Rotational-	3a Fuel delivery characteristics		Starting Idle	fuel delivery	5a Idle stop	
Test oil ter rev/min 1	mp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
980	48,0-49,0 (46,5-50,5)	1020-1030*	-	-	1	92,0-108,0 89,0-111,0 = 19,5 - 21,0 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MWM 4.1 a

2. Edition

En

PES 4 A 80 D 320 RS 1339 Komb.-Nr. O 400 474 159 RSV 300-1000 A7B 505-1R

supersed **6** · 82 compan MWM engine D 226 · 4

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2.15-2.35) mm (from BDC)

		(2,10-2,00)				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
980	9,7-9,8	4,8 - 4,9	0,25(0,4	)		
300	7,2-7,4	1,0 - 1,6	0,2(0,35)			
!				<u> </u>		
				į		

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 To:	que control
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
<u>'</u>	2	3	4	5	6 •	_ ′	<u>  °                                   </u>	9	10	<u>  ' '                                 </u>
loose	800	0,3-1,0	-	•	-	ca.27	300	5,5	-	<b>!</b>
10036	x =	6,0					100 300	min.19,0 5,9-6,1		
ca.66	8,7 4,0 1205	1020-1030 1050-1080 0,3-1,7	1				850-41 450			

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-le	oad stop	6 Rotational- speed limitat.		el delivery tracteristics	Starting Idle	fuel delivery	5a Idle stop	
Test oil ten rev/min 1	np. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
980	48,0 - 49,0 (46,5 - 50.5)		•	-	100	88,5-104,5 (85,5-107,5 - 19,5 - 21,0 mm RW	)	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 MB 5,7 p

2. Edition

<u> En</u>

PES 6 A 80 D 410 RS 2085

RSV 350-1400 A 5 B 716 DL

Komb.-Nr. 0 400 876 211

supersedes 12./4
Daimler-Benz

engine 126 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

estotation at the

(2,10-2,30)

mm (from BDC)

cm <sup>1</sup> /100 stroke	es cm <sup>-/</sup> 100 strokes 4	mm 2	cm1/100 strokes	mm
3	4	12		1 -
			3	6
,0 5,5	-6,0 0,4			_
,0 2,3	-3,0			
,0 1,3	-2,2			
	2,3	,0 2,3-3,0	,0 2,3-3,0	,0 2,3-3,0

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Degree of deflection of control lever	r rated spee Control rod travel mm	Control rod travel mm rev/min	Interm	ediate i	ated speed	Control- lever dellection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm 9	11 3 /	rque control Control rod travel mm
ca.71	1400 1460 1520	13,0 9,2 4,6	with	out a	uxiliar	ca. 28 spring	350 200 350	5,5 19,0-21,0 5,2-5,8	1380 1000 500	0 0-0,3 0,6-0,8
ca.68	1400 1500 1600	ca. 8,2 3,0 0,3-1,0	with	auxi	iliary s	pring	480 620	1,7-3,5 0-1,0	300	0,0 0,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(B)	ill-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	<b>49</b> tdt	e stop ¿Control rod
Test oil te rev/min 1	emp 40°C (104°F) cm1/1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm1/1000 strokes	rev/min 6	cm*/1000 strokes 7	rev/min 8	travel mm 9
1400	56,5-57,5 (55,0-59,0	1425-1435*	1000	54,0-56,0 (52,5-57,5)	100	ca. 79	350	5,5
			800	52,5-54,5 (51,0-56,0)		idle speed 1510 3.5 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

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Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 r

2. Edition

PES 6 A 80 D 410 RS 2085 Komb.-Nr. 0 400 876 239 EP/RSV 350-750 A0 B 741 (350-900)

supersed 10.75
company
engine OM 352
(57/63 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,15+0,1

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	9	5,6 - 6,0	0,4			
	6	2,2 - 3,0				
200	6	1,3 - 2,2				
	1		1		<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper	rated spee	<del></del>	Intermediate	rated spe	ed		r rated spe		3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control fever	rev/min	Control rod travel mm	rev/min	Control rod travel	
1	2	3	4	5	6	7	8	9	10	11	
ca.31	750 775 850	16,0 10,8 4,3	without	aixil	liary spri	ca. 17 ng	350 200 350	5,8 19 -21 5,5-6,1	-	-	
ca. 29 ⑤	740 775 820	ca. 8,8 ca. 4,6 0,3-1,0					375 410	1,2-3,5 0 - 1			

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	ád stop	6 Rotational- speed limitat.			Starting Idle	fuel delivery	(5a) Idle stop	
1	. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/f000 strokes 7	rev/min 8	Control rod travel mm 9
730	47,0 - 48,0	745-755 *			100	11,8 - 12,4		
(880	48,5 - 50,5	895-905 *) (VH ca. 33)				mm RW		
			775-7	0 3,6 mm RW				
(increa	se by ± 1,5 c	n³ )	930-9	5 3,6 mm RW		<u> </u>	<u> </u>	

Checking values in brackets

• 1 mm less control rod travel than col. 2

5

and Governors

WPP 001/4 MB 5.7 m

Edition

PES 6 A 80 C 410 RS2085X EP/RSV 350-1300 A2B1005D (1) EP/RSV 350-1425 A2B1001D (2) RS2085X ..D.. RS2085X

EP/RSV 350-1425 A2B1007D (3) EP/RSV 350-1400 A2B1052D (4) RS2085X

EP/RSV 350-1300 A2B1005D (5) RS2085T

supersedes 0.83

company Daimier-Benz OM 352 - Unimog (1+5)84 PS

90 PS (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

100 PS 110 PS

## A. Fuel Injection Pump Settings

Port closing at prestroke

2.15 + 0.1

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	9	3,8 - 4,3	0,3			
	6 15	1,2 - 2,0 9,8 - 11,0				
200	9	1,8 - 2,6				
1	1					

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

350-1300 A2 B1005 D (1)

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	4 Lowe Degree of deflection of control lever	rated spe rev/min 8	ed Control rod travel mm 9	3 Tor	que control Control rod travel mm
loose	800 ×	0,3-1,0 = 4,25	-	-	-	lose		min.17,5	500	β,0+0,1 9,6+0,1 9,3+0,2
ca.48	7,0 4,0 1575	1340-1350 1410-1440 0,3-1,7					350 695 <b>-</b>	6,8-7,0 755=2,0	950	8,3+0,3

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad stop	6 Rotational- speed limitat	Rotational- speed limitat.  3a Fuel delivery characteristics		Starting Idle	fuel delivery	(5a) Idle stop		
Test oil tem rev/min 1	p. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
(1) 1300	40,0 - 41,0 (38,5-42,5)	1340-1350 •	500	39,5 - 41,5 (37,5-43,5)	100	78,0 - 88,0 (75,0-91,0) = 13,6 - 14,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **B.** Governor Settings

# 350-1425 A2 B1001D (2)

Degree of deflection of control	rated spee	Control rod travel	Intermediate Degree of deflection of control lever	rated spe	Control rod travel	4 Lower Degree of deflection of control lever	r rated spo	Control rod travel	3 to	que control Control rod travel
lever 1	2	3	4	5	6	7	8	9	10	11
ca.60	1425 1500 1560	16,0 11,5 6,8	without	auxil	liary spri	ca.22 ng	350 200 350	7,5 19 - 21 7,2-7,8	1400 900	0 0 -0,2
(5)	1530 1600 1820	7,5-10,5 4,0-6,0 0,3-1,0	with au	ıxiliaı	ry spring		500 700 940	5,1-6,6 0,1-4,0 0 - 1	400	1,3-1,5

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad stop	6 Rotational speed limitat	(3a) Fuel delivery characteristics		Starting Idle	fuel delivery	(5a) Idle stop		
Test oil tem rev/min 1	p 40°C (104°F) cm*/1000 strokes 2	Note changed to rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm 1/1000 strokes 7	rev/min	Control rod travel mm 9	
(2) 1400	41,0 - 43,0	1455-1465	1000 800 500	37,0 - 40,0 38,5 - 41,5 40,0 - 43,0	100	72,5 - 82,5			
(inc	rease by + 0,	cm³)ı	(6a)						

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Testoil-ISO 4113

# **B.** Governor Settings

#### 350-1425 A2 B1007D (3)

$\mathcal{O}$	rated spee		Intermediate rated speed			Lower rated speed Degree of 1 Control rod			3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	travel	deflection of control lever	rev/min	travel	rev/min	travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1425	16,0				ca.22	350	7,2	1400	0
	1500 1560	11,4	without	auxi <sup>1</sup>	liary spri	ng	200 350	19 - 21 5,9-7,5	950	0
<b>(5)</b>	1520 1650 1800	8,0-10,9 2,1-4,4 0,3-1,5	with au	ıxiliaı	ry spring		600 850	2,3-4,6 0 -1,5	450	0,9-1,1

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-I	oad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	159 1016	estop
Test oil ten rev/min 1	cm <sup>3</sup> /1000 strokes	Note changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(3) 1400	45,0 - 47,0	1420-1430	1000 800 500	41, 0 - 44, 0 42, 5 - 45, 5 40, 0 - 43, 0	100	72,5 - 82,5		
				_				

# **B. Governor Settings**

350-1400 A2 B1052D (4)

(1) Upper	rated spee	đ	intermediate rated speed			(4) Lowe	r rated spi	(3) Torque control		
Degree of deflection of control lever	*ev/min	Control rod trave! mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rad travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.59	1400 1480 1530	16,0 10,8 7,0	without	auxil	liary spr	ca.22 ng	350 200 350	7,5 19 - 21 7,2-7,8		0 0,1-0,3 0,8-1,0
<b>⑤</b>	1500 1600 1800	7,2-10,6 3,6-5,5 0,3-1,0	with au	ıxilia	ry spring		600 950	3,4-5,4 0 - 1	400	0,6-1,0

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-l	oad stop	6 Rotational speed limitat	(3a) Fuel delivery characteristics		Starting	fuel delivery	(5a) Idle stop	
Test oil ten rev/min 1	cm <sup>1</sup> /1000 strokes	Note changed to rev/min 3	fev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm 9
(4) 1400	50, 5 - 52, 5	1425-1465	800	46,0 - 49,0 44,5 - 47,5 44,5 - 47,5	100	72,5 - 82,5		
(inc	rease by + 0,	5 cm³))	6a)					

Checking values in brackets

# **Testoil-ISO 4113**

• 1 mm less control rod travel than col 2

# **B. Governor Settings**

# 350-1300 A2 B1005D mit 2085 T (5)

1 Upper Degree of deflection of control tever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	4 Lowe Degree of deflection of control tever	r rated spe rev/min 8	Control rod travel mm		que control Control rod travel mm
ca.51	1300 1360 1400	16,0 10,8 6,7	withou	ut aux	iliary sp	ca.19 ring	350 200 350	19 - 21 7,7-8,3	1280 800	0 0,8-1,0
ca.49	1300 1400 1520	ca.8,2 ca.3,7 0,3-1,0	with a	auxili	ary sprin	9	600 780	2,2-4,3 0 - 1		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad slop	6 Rotational- speed limitat.		et delivery aracteristics	Starting Idle	fuel delivery	5a) Idle stop	
Test oil tem rev/min 1	p 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min	rev/min	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(5) 1290	40,0 - 41,0 (38,5 - 40,5)	1330-1340 (1325-1345)	800 500	36,5-39,5 (35,0-41,0) 36,5-39,0 (35,0-40,5)	100	72,5 - 82,5		

# © Test Specifications Fuel Injection Pumps ② and Governors

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WPP 004/4 KHD 6,1 b 3. Edition

Er

PES 6 A 85 D 410/3 RS 2366 RQ 275/1400 AB 798 D supersedes 11.77 RS 2415 EP/RS 325/1400 AOB 675D, 699D company KHD PES 6 A 80 D 410/3 RS 2348\*\* EP/RSV..661D, 673D, 686D, 720D BF 6 L 913 F 6 L 913\*\*

Test RS governor according to WPP 001/4, KHD 1 c

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 + 0,1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm	Fuel delivery 8,5 & cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  8,0   cm³/100 strokes  3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4	9	3,1 - 3,5	
	6	0,6 - 1,4		6	0,1 - 0,6	
200	9	1,4 - 2,2		9	0,6 - 1,3	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

RQ 275/1400 AB 798 D

Checkin	g of slider	Full-load : Setting p	•	•	cifications (4)	Idle spec	•		cifications (5)	Torque d	(3)
rev/min	Control rud travel mm 2	rev/min 3	Control red travel mm 4	Control red travel rrims	rev/min	rev/min 7	Control red travel mm B	rev/min 9	Control rod travel mm	rev/min	travel
1300	13,7-14,3	1300		1420 1460 1530 1620	13,6-14,0 9,6-13,0 0 - 9 0		0	250	6,2-8,1 4,8-6,8 3,0-5,2 0		15,8-16,0 14,9-15,3 14,0-14,3

Torque-control travel on flyweight assembly dimension a = 0,65

\_\_\_

Speed regulation: A

t mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting for	uel delivery d ( Contra
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes / mm 7
Inst	ructions P. 3 - 4			,		
(inc	rease by ± 1,0 cm	3)				./.

Checking values in brackets

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2	mm 3 100 A 8 B 6	deflection of control lever 4	rev/min 5	mm 6	deflection of control lever	rev/min	mm _=	rev/min	mm
1355 1400		61 D			7	8	9	10	111
1400	16.0								
1460	12,6	without	auxil	iary spri	ca.15		7,5 min.19,5	1400	0
	4,0					325	7,9-8,1	1000	0,5-0,7
1500		with au	kiliar	y spring		630 <b>-</b> 690		500	1,2-1,4
325-11	50 A 8 B 6	73 D	- e+						
1200 1250 1220	11,1 5,4 7,5-10,4				ca.21	325 500	5,2-5,8 1,4-3,4	1130 500	0 1,0-1,2
		with au	ki liar	y spring		660	0 -1,5		
325-90	00 A 7 B 68	6 D, 72	0 D			I	·····		T
900 940 980 960	16,0 11,2 4,8 6,0-9,5	ca.26	325 150 325 450	6,0 19 - 21 5,7-6,3 1,5-3,7	ca.26	325 380	5,7-6,3 1,5-3,8	880 400	0 0,9-1,1
		686 D			720 D				
25-140	DO A O B 67	5 D	<u> </u>			<u> </u>	<u> </u>	<u>.l</u>	<del></del>
1480 1560 1620	11,4-12,5 6,1-8,1 1,6-4,1					400 500 1000	4,3-6,4 8,5-4,0 8,3-3,9		0 0,9-1,6 1,2-1,6
05.444	00.0.0.00					1500	0		
<del></del>	<del></del>	T	1			325	8.3	1380	0
1450 1500 1550	11,9-13,3 7,7- 9,8 2,8- 5,8					300 400 550	8,4-9,1 6,0-6,8 3,5-4,0	1100	0,3-0,9 0,7-0,9
	325-11 1150 1200 1250 1220 1300 1380 325-90 940 980 960 1000 1080 325-140 325-140 1480 1560 1620 1680	1580 0,3 - 1,5  325-1150 A 8 B 6  1150	1580 0,3 - 1,5  325-1150 A 8 B 673 D  1150 16,0 1200 11,1 1250 5,4  1220 7,5-10,4 1300 1,3- 3,6 1380 0,3- 1,5  325-900 A 7 B 686 D, 72  900 16,0 940 11,2 980 4,8 960 6,0-9,5 1000 2,6-4,6 1080 0,3-1,5  686 D  325-1400 A 0 B 675 D  325-1400 A 0 B 675 D  325-1400 A 0 B 675 D  325/1400 A 0 B 699 D  325/1400 A 0 B 699 D  325/1400 A 0 B 699 D	1580 0,3 - 1,5  325-1150 A 8 B 673 D  1150 16,0 1200 11,1 1250 5,4 1220 7,5-10,4 1300 1,3- 3,6 1380 0,3- 1,5  325-900 A 7 B 686 D, 720 D  900 16,0 ca.26 325 150 325 960 6,0-9,5 1000 2,6-4,6 1080 D,3-1,5  686 D -10w  325-1400 A 0 B 675 D  325/1400 A 0 B 699 D  1400 15,8-16,6 1480 11,4-12,5 1560 6,1- 8,1 1620 1,6- 4,1 1680 0,3- 1,0	325-1150 A 8 B 673 D  1150	1580 0,3 - 1,5   325-1150 A 8 B 673 D   1150	1580   0,3 - 1,5	1580   0,3 - 1,5	1580   0,3 - 1,5

engine p Full load ( Control re Test oil te	delivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting fuel delivery ldle switching point	Intermediate rotational speed Torque-control travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min cm³/1000 strokes	rev/min   ram
1	2	3	4	5	6 7	8
BF 6	L 913 - PES 6	A <u>85</u> DRS 2	366, 2	2415 - Fori	3 output at	min <sup>-1</sup>
1400	88,0-90,0	1420	800	80,0-83,0	160 PS / n = 2800	
1400	84,0-86,0	1420	800	66,0-69,0	142 PS / n = 2800	
1400	83,5-85,5	1420	800	66,0-69,0	140 PS / n = 2800	
1400	80,5-82,5	1420	800	57,5-60,5	130 PS / n = 2800	
1400	76,5-78,5	1420	800	52,0-54,0	120 PS / n = 2800	)
1325	87,5-89,5	1340	800	82,5-85,5	160 PS / n = 2650	)
1325	82,5-84,5	1340	800	66,0-68,5	140 PS / n = 2650	
1325	80,0-82,0	1340	800	58,5-61,5	130 PS / n = 2650	)
1325	76,5-78,5	1340	800	52,5-55,5	120 PS / n = 2650	)
1325	72,5-74,5	1340	800	48,5-51,5	110 PS $/ n = 2650$	)
1250	87,0-89,0	1270	800	84,5-87,5	160 PS / n = 2500	)
1250	83,0-85,0	1270	800	76,0-79,0	148 PS / n = 2500	
1250	81,0-83,0	1270	800	69,5-72,5	140 PS / n = 2500	
1250	77,5-79,5	1270	800	62,5-65,5	130 PS / n = 2500	
1250	74,5-76,5	1270	800	54,5-57,5	120 PS / n = 2500	)
1250	73,0-75,0	1270	800	52,0-55,0	115 PS / n = 2500	า
1200	86,0-88,0	1220	800	84,5-87,5	156 PS / n = 2400	
1200	78,0-80,0	1220	800	68,0-71,0	135 PS / n = 2400	
1200	73,5-75,5	1220	800	56,5-59,5	120  PS  /  n = 2400	
1165	84,0-86,0	1180	800	84,5-87,5	152 PS / n = 2330	
1165	78,0-80,0	1180	800	69,5-72,5	125 PS / n = 2330	า
1150	83,5-85,5	1165	800	84,5-87,5	152 PS / n = 2300	
1150	80,0-82,0	1165	800	72,0-75,0	142 PS / n = 2300	
1150	76,5-78,5	1165	800	66,0-69,0	130 PS / n = 2300	
1150	73,0-75,0	1165	800	58,5-61,5	120  PS / n = 2300	
1150	•			-	•	
1100	70,5-72,5	1165	800	52,0-54,8	110 PS / n = 2300	
1100	82,0-84,0 75,0-77,0	1115 1115	800 800	84,5-87,5 65,5-68,5	147 PS / n = 2200 125 PS / n = 2200	
1075	82,0-84,0	1090	800	84,5-87,5	144 PS / n = 2150	
1075	78.0-80.0	1090	800	76,0-79,0	136 PS / n = 2150	
					•	-
1075	71,0-73,0	1090	800	58,0-61,0	115 PS / n = 2150	
1050	76,5-78,5	1065	800	73,5-76,5	130 PS / n = 2100	
1000	82,5-84,5	1015	800	84,5-87,5	137 PS / n = 2000	
1000 1000	77,0-79,0	1015	800	72,0-75,0	130 PS / n = 2000	
יטטטי	74,0-76,0	1015	800	69,5-72,5	123 PS / n = 2000	J

# C. Settings for Fuel Injection Pump with Fitted Governor

	<del></del>			<u> </u>				
engine po full toad of Control ro Test oil ter	Jelivery	Rotational speed limitation	Fue! deliv	very characteristics	Starting Idle switchir	fuel delivery ng point	Intermed rotational Torque-c	speed
rev/min	cm 1/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	l ww
1	2	3	4	5	6	7	8_	
BF 6	L 913 - PES 6	A <u>85</u> D RS	2366,	2415 - F or	B out		min	
								-
1000	68,0-70,0	1015	800	60,0-63,0		PS / n = 2000		
900	82,0-84,0	910	800	84,5-87,5		PS / n = 1800		
900	70,5-72,5	910	800	69,5-72,5		PS / n = 1800		
900	59,0-61,0	910	800	54,5-57,5		PS / n = 1800		
875	68,0-70,0	885	800	66,0-69,0	106	PS / n = 1750	)	
875	59,0-61,0	885	800	55,5-58,5	95	PS / n = 1750	)	
750	85,0-87,0	760	-	-	105	PS / n = 1500	)	
750	78,0-80,0	760		-	100	PS / n = 1500	)	
	72,0-74,0	760	-	-	95	PS / n = 1500	)	
750	56,0-58,0	760	-	•		PS / n = 1500		
BF 6 !	L 913 -			- A power	er out	put		
1150	82,0-84,0	1170	-	-	135	PS / n = 2300	)	
	72,5-74,5	1170	-	-		PS / n = 2300		
	81,0-83,0	1090	-	•	130	PS / n = 2150	)	
	70,0-72,0	1090	-	•		PS / n = 2150		
1000	81,0-83,0	1015	-	-	123	PS / n = 2000	)	
1000	67,5-69,5	1015	_	•	100	PS / n = 2000	)	
900	78,5-80,5	910	-	-		PS / n = 1800		
900	61,5-63,5	910	-	-		PS / n = 1800		
	77,0-79,0	885	-	-		PS / n = 1750		
750	83,5-85,5	760	-	-		PS / n = 1500		
750	58,5-60,5	76Ó	-	-	76	PS / n = 1500	)	
F 6 L	913 - PES 6 / EP/RS :	A 80 D RS 2 325/1400 A O B		- F - p	ower (	output		
1400 1400	69,0-71,0 64,0-66,0	1420 1420	700 700	64,5-67,5 54,5-57,5		PS / n = 2800 PS / n = 2800		

and Governors

WPP 001/4 FOR 4,2 d Edition

En

3.

PES 4 A 85 D 210 RS2378

EP/RSV 550-1150 A8B736L (1)

supersede 0.78

Ford England

PES 6 A 85 D 210 RS2379

EP/RSV 550-1150 A5B737L (2)

254 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Differens between

2,50-2,60 (2,45-2,65) RW 9 - 21 = 4 -  $5^{\circ}$ mm (from BDC) Port closing at prestroke

Rotational speed	Control rod travel mm	Fuel delivery  cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1000	9	4,9 - 5,5	0,3			
200	6	0,1 - 0,9				

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

736L (1)

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod	4 Lowe Degree of deflection of control lever	reted spe rev/min 8	Control rod travel mm	Control rod travel mm
ca.44	1175 1200 1220	16,0 10,0 2,0	withou	ıt aux	oliary spi	ca.19	550 150 550	6,6 19-21 6,3-6,9	
<b>⑤</b>	1150 1230 1300	ca. 9,5 ca. 3,8 0,3-1,0	1		ary spring		620 700	1,5-4,0 0 - 1	

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ead stop	6 Rotational- speed limitat.		et delivery practeristics	Starting Idle	fuel delivery	(5a) ldf	e stop
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
(1) 1000	63,0 - 65,0 (62,0 - 66,0)	1200-1210*		ŗ	100	min.20mmR		
	(02)			1245 =3,8mm R	550	12,5 - 16,5		./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1 Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod trave! mm 3 .	Intermediate Degree of deflection of control lever		Control rod travel mm	4 Lowe Degree of deflection of control lever 7	r rated spi rev/min 8	Control rod travel mm	3 To	Control rod travel mm
ca.44	1150 1200 1230	16,0 9,0 2,5	without	auxi	liary spr	ca.22 ng	550 150	6,6 19 - 21	-	-
(5)	1150 1249 1320	ca. 9,5 ca. 4,0 0,3-1,0	with au	xiliaı	ry spring		550 620 720	6,3- 6,9 2,4- 4,2 0 - 1,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad stop	6 Rotational- speed limitat				fuel delivery	(58) Idle stop		
Test oil tem rev/min 1	np. 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
(2)		1200-1210*	-	· (u	100	min. 20,0 mm RW	-	-	
1000	58,0 - 60,0 (57,0 - 61,0)		69		550 230	12,5 - 16,5 1245 = 3,8 mm RW			

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Testoil-ISO 4113

# **B.** Governor Settings

1 Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm	Intermediate Degree of deflection of control lever	rated spe rev/min 5	ed Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	 que control Control rod travel mm
				<u> </u>	<u> </u>				
5									

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-k	Full-load stop  6 Rotational-speed limitat			el delivery aracteristics	Starting Idle	fuel delivery	(5a) Idle stop		
Test ell tem rev/min 1	p 40°C (104°F) cm³/1000 strokes 2	Note changed to . rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7	ł	Control rod travel mm 9	
			~						

Checking values in brackets

\* 1 mm less control rod travel than col 2

# **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 KHD 8,8 a Edition 3.

estoil-ISO 411

PES 6 A 95 D 410 RS2416

PES 5 A 95 D 410 RS 2417

PES 4 A 95 D 410 RS2424

RQ.. 865D, 1054

EP/RSV .. A8 B616D, A7 B616D

ROV 275-1325 AB799D

supersede2.79

company KHD Lizenz TAM

F6 L413R (8,8)

F5 L413R (7,4)

F4 L413R (5,9)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>1</sup> /100 strokes 3	mm 6
1000	9	7.5 - 8.0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RO 275/1100 AB865D

Checking	g of slider	Full-load	speed re	gulation		idle spec	ed regula	ation		Torque o	control
	Control rod travel mm 2	Setting por rev/min 3	Control rod travel rot 4	'	cifications Control rod travel mm 6	Setting prev/min	Control rod travel		cifications Control rod travel mm 10	rev/min	Control rod travel mm
600	15,7-16,3	600	16,0	1130 1200 1230 1320	14,5-14,8 6,2-11,5 0 - 9,5	570	0	100 200 350 460	7,4-8,1 6,2-8,1 2,4-4,6	800 1000	15,8-16,0 14,8-15,0

Torque-control travel on flyweight assembly dimension a = 0,35 mm

Speed regulation At

1 mm less control

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting f	uel delivery
rev/min	cm <sup>1</sup> /-1000 strokes	rev/min 3	rev/min	cm³/-1000 strokes 5	rev/min	cm <sup>1</sup> /100 s <b>Q</b> ol <b>lds.</b> 7
Instr	uctions P. 5 -	6			100	114 - 124

Checking values in brackets

3.84

Geschäftsbereich KH. Kundendienst. Kfz-Ausrustung. • 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en République Fédérale d'Allemagne per Robert Bosch GmbH.

PRG che	Control rod travel	Full-load Setting po rev/min 3		-	rev/min	Idle spec Setting p rev/min 7	Control   red travel	Test spe	Control rod travel mm		Control rod (3) travel mm
600	15,7-16,3	600	16,0	1220 1280 1300 1420	14,5-14,8 7,0-12,1 0 - 6,7	560	0	100 200 350 460	7,3-8,1 6,1-8,1 2,4-4,6 0	800 1000	15,8-16,0 14,8-15,0
			0.25								1 mm less control

on flyweight assembly dimension a

Speed regulation At

rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor co Test oil tem		Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting for	uel delivery d Control
	cm <sup>3</sup> /- 1000 strokes 2	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
Pag	e 5 - 6					

Checking values in brackets

Testoil-ISO 4113

**B. Governor Settings** 

Checkin PRG che	g of slider	Full-load Setting p	•	-	cifications (4)	idle spec	-		cifications (5)	Torque (	(3
rev/min	Control rod travel mm	rev/min	Control rod travel rnm 4	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min 11	travel mm
600	15,7-16,3	600	16,0	1340 1400	14,5-14,8 9,6-13,0	560	0	100 200	7,4-8,1 6,1-8,1	800	15,8-16,0
				1470 1560	0 - 8,2			350 460	2,5-4,6 0	000	14,8-15,0
Torque-r	ontrol travel		0,35								1 mm less contro

Torque-control travel on flyweight assembly dimension a =

Speed regulation At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / m
1	2	3	4	5	6	7
Pag	e 5 - 6	, ,				1
	1					
					!	•
		•	i		!	

KHD 8,8 a

Upper rated speed		Intermediate rated speed			Lower rated	speed		Sliding sleeve travel		
Degree of deflection of control		Control rod travel	Degree of deflection of control	1	Control rod travel	Degree of deflection of control		Control rod travel		ontrol travel
	rev/min	mm	iever	rev/min	mm	lever	rev/min	mm	rev/min	ww
1	2	3	4	5	6	7	8	9	10	11

#### 300-750 A7 B616D

ca. 48	750 800	16,0				ca.24	300	6,0	730	0
	820	8,0 4,2	withou	t aux	pliary spr	ing	125 300	19,0-21 5,7-6,3		
	785 810	9,4-11,6 4,8-7,7	with a	uxilia	ry spring		450 560	5,7-6,3 0,6-3,2 0 - 1	350	0,7-0,9
	940	0,3-1,0			, , opg					

# 300-900 A7 B616D

ca. 60	900 950	16,0			ca.27	300	6,0	880	0
	975	9,8		uxiliary sp liary sprin	"	100 300 450	19 - 21 5,7-6,3 0,8-3,3	400	0,9-1,1
	950 1000 1100	8,6-10,9 2,8- 4,7 0,3- 1,0	WICH GUXT	, sprin	9	600	0 - 1		

#### 300-1000 A8 B616D

ca. 50	1000 1050	16,0				ca.21	300	6,0	980	0
	1100	11,7 6,5			liary spr	Ĭ	150 300	19 - 21 5,7-6,3	400	0,9-1,1
	1050 1120	10,8-12,6 4,0-6,0	with au	xilia	ry spring		500 650	1,2-3,6 0 - 1	400	p,9-1,1
	1270	0,3-1,0								

# 300-1150 A& B616D

ca.53	1150 1200 1250	16,0 11,8 7,0			ca.19	1	5,5 5,9-6,1	1	0 0 <b>,4-</b> 0,6
	1200 1300 1430	11,0-12,8 2,7- 4,6 0,3- 1,0	without aux with auxili	,		540-6	00=2,0	400	D,9-1,0

#### 300-1325 A8 B616D

ca.68	1325	16,0			ca.24	300	6,0	1310	0
	1400 1440	9,4 5,0	without au	kiliary spr	ing ·	150 300	19 - 21 5,7-6,3	AEO	0.9-1.1
	1400 1450 1600	8,3-10,5 3,0-4,7 0,3-1,0		iary spring	-	450 650	2,3-4,4 0 - 1	450	0,9-1,1

<u> </u>	B) Setting values for the governor										
Upper rated	speed		Intermediate	e rated sp		Lower rated	speed		Sliding s	leeve travel	
Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Torque-c	control travel	
lever	rev/min	mm	<b>∜eve</b> r	rev/min		lever	rev/min	mm	rev/min	1	
<del></del>	2	3	14	5	6	7	8	9	10	111	
RQ 900	0 AB 1	054			·				· · · · · · · · · · · · · · · · · · ·	<del>,</del>	
ca. 26	850	16,0-19,0	-	-	-	-	-	-	900	3,2	
	900 950	16,0-19,0 9,0-12,5 0,8- 3,8			Ì				-	-	
		0,00,00									
									İ		
	<u> </u>		<u> </u>		<u> </u>	1	<u> </u>	<u> </u>	<u> </u>		
RQ 75	0 AB 1	054			<del></del>	<del></del>		I	1		
ca. 26	720	15,0-18,0	-	-	-	-	-	-	750	3,4	
	750 800	8,8-11,7 0 - 2,4	<u> </u>				•				
		" -,"						! 	-	i -	
					i					ļ	
	]				1			}			
		<u> </u>	1	<u>!</u>	<u> </u>	orque co	ntrol	travel a	- 0 0		
RQV 2	/5-132 T	5 AB799D	1	Т	<del> </del>	or que co	1	liavei a	- 0,9	1	
ca. 68	1375	15,0-18,0	-	-	-	ca.12	200	6,4-8,2	1375	8,3	
	1630	0		ĺ			400 600	2,8-4,6 1,5-3,0	1325	0	
ca. 66	1325	15,0-17,5						0 -1,4		0,8-1,0	
	1410	7,4-13,0		1			850	0		, ,	
	1600	0 0,0		j			l				
		<u> </u>	<u> L</u>	<u> </u>		<u> </u>				<u> </u>	
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	<del></del>		<del>,</del>			·		r	<del></del>		
							}				
							1				
				}							

# C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	Fuel delin	very characteristics	Starting Idle switchin	fuel delivery g point	Intermediate rotational speed Torque-control travel
rev/min cm <sup>2</sup> 1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min mm 8
1. <u>85(115) - 105(4</u> 1325 80,5-82,5		) / 26	50 850	77,5-8	0,5 100	119-129
	<del>-</del>	\				
2. <u>79(108) - 100(1</u> 1325 77,5-79,5		) / 20	<u>850</u> 850	74,5-7	7,5	119-129
3. <u>81(110) - 101(1</u>	37) - 121(169	) / 25	00			
1250 80,5-82,5	1270		850	77,5-80	,5	119-129
4. <u>77(105) - 97(13</u>		/ 250				
1250 77,5-79,5	1270		850	74,5-7	7,5	119-129
5. <u>74(100) - 92(12</u> 1250 72,5-74,5		/ 250	_	71,5-74	1 5	119-129
	<del></del>			71,5-7-	<del></del>	113-123
6. <u>76(104) - 96(13</u> 1150 78,5-80,5		/ 230	_	77,5-80	),5	119-129
7. 74(100) - 92(12	5) - 110(150)	/ 230	<u> </u>			
1150 74,5-76,5		7_200	<del></del>	74,5-77	7,5	119-129
8. 70( 95) - 87(11	8) - 105(143)	/ 230	<u>0</u>			
1150 70,5-72,5	1170		850	71,5-74	,5	119-129
9. 66( 90) - 83(11	3) - 100(136)	/ 230	0			
1150 66,5-68,5	1170		850	67,5-70	,5	119-129
10. <u>70( 95) - 87(11</u>	8) - 104(142)	/ 215	<u>0</u>			
1075 74,5-76,5	1090		850	74,5-77	7,5	119-129
11. 66( 90) - 82(11	2) - 99(135) /	/ 2150		-		
1075 70,5-72,5	1090		850	71,5-74	<b>,</b> 5	119-129
12. <u>63( 85) - 79(10</u>	7) - 95(129) /	2150				
1075 66,5-68,5	1090		850	57,5-70	,5	119-129
13. 66( 90) - 82(11		2000				
1000 73,5-75,5	1020		850	73,5-76	,5	119-129
14. 62( 84) - 78(10		2000				
1000 70,5-72,5	1020	<del></del>	850	71,5-74	,5 ————————————————————————————————————	119-129
15. 60 ( 82) - 75(1		/ 200	_	٠.	•	
1000 67,5-69,5	1020		850 6	58,5-71	<b>,</b> 5	119-129

Checking values in brackets

\* 1 mm less control rod travel than col. 2

0

# F 4 - 5 - 6 L 413 R - Power in kW (HP) at engine speed: (Cont.) C. Settings for Fuel Injection Pump with Fitted Governor

Full-to Contre	e power ad celivery ol-rod stop il temp. 40°C (		Rotational speed limitation	Fuel deliv	very characteristics		idle switchir	fuel delivery		intermedi rotational Forque-c travel	speed
rev/m	n cm <sup>3</sup> 100	0 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		rev/min 6	cm <sup>3</sup> /1000 strokes	1	rev/min B	ጠጠ
16.	60( 82)	- 76(10	19 3) -91(124) / 910	<del> </del>	<del>-</del> .	<del>-</del>		100		119-	129
17.		72( <u>98</u> ,5-72,5	) -87(118) / 910	1800	· <u>-</u>	•				119-	129
	900 67	,5-69,5	4) - 83(113) , 910		_	-				119-	129
	750 74	,5-76,5	760	/ 1500	<u>-</u>	_				119-	129
	750 70	,5-72,5	2) - 72( 98) , 760	/ 1500	•	-				119-	129
	750 66	,5-68,5	8) - 68( 93) , 760	/ 1500	-	-	- <del></del>	<del> </del>		119-	129
	66( 90)		R - A power 3) -100(136) 1150	output / 2300	at speed					119-	129
23.		- 79(10) ,5-76,5	7) - 95(129) , 1075	/ 2150						119-	129
24.		- 75(10) ,5-75,5	2) - 90(122) , 1000	/ 2000				· · · · ·		119-	129
25		- 69( 94 ,5-76,5	4) - 83(113) , 900	/ 1800				. •.		119-	129
26.		- 57( 78 ,5-75,5	3) - 68( 93) , 750	/ 1500						119-	129

# 0

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9,6 1

1. Edition

En

PE 6 A 95 D 410 LS 2450

RQV 300-1250 AB 1085 L

supersedes companyTAM

Komb.-Nr. 0 400 646 269

engine: F6L 413 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at prestroke

mm (from BDC)

irave <del>l</del> mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	(torque-control valve) mm 6
10,3+0,1	9,2-9,4	0,3(0,6)			
7,1-7,3	1,8-2,4	0,3(0,5)			
2	10,3+0,1	3 10,3+0,1 9,2-9,4	cm <sup>3</sup> /100 strokes 100 strokes 4 100,3+0,1 9,2-9,4 0,3(0,6)	100 strokes mm 2 10,3+0,1 9,2-9,4 0,3(0,6)	100 strokes mm cm³/100 strokes 4 2 3 3 100 strokes 2 3 10,3+0,1 9,2-9,4 0,3(0,6)

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed		Lower rated	speed	•	٠. ٦	Sliding sleeve travel	
	rev/min Control	Control rod (	<b>9</b>	Degree of deflection		Control :	rod	Degree of deflection		Control travel	rod		· ①
of control	rod travel	mm rev/min (	20)	of control lever	rev/min	m:n	<b>(4)</b>	of control lever	rev/m <del>i</del> n	mm	(3)	rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1300	15,2-17,	8	-		-		ca.12		min. 7,1-7			0,2-0,5 4,3-4,5
ca. 64	9,3 4,0 1500	1290-130 1370-140 0 - 1,0	0						300	<b>/ ,   - /</b>	,,,		5,8-5,9 8,1
								<b>③</b>					

Torque control travel a = 0,4 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle s	very characteristics (5e speed (56)	Starting fuel delivery 6 Idle switching point		Torque travel	-control (5)
rev/m <del>in</del> 1	cm³/1000 strokes .	rev/min 4a 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm
1250	91,5-93,5 (89,5-95,5)	1290-1300 *	700 1000	(89,5-96,5)	100	116,5-126,5	250 700 835 1010	10,3+0, 10,7+0, 10,6+0, 10,3+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2 5 . 84



89

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 19,0 n

2. Edition

RQV 750 AB 996 L PE 12 A 95 D 610 LS 2453 1 - 4 - 9 - 8 - 5 - 2 - 11- 10- 3 - 6 - 7 - 12  $0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315^{0} + 0,5^{0}$  $(+0,75^{0})$  supersede 3.83 company: KHD engine: F 12 L 413 F

Komb.-Nr. 0 400 640 094 170 kW / 1500 min<sup>-1</sup>(1) 194 kW / 1500 min<sup>-1</sup>(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	itrok <del>e</del>	(1.95-2.15)	mm (from BDC)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
710	9,5-9,6	8,0 - 8,2	0,3(0,6)			
300	5,6-5,7	0,4 - 0,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed	· · · · · · · · · · · · · · · · · · ·	Intermediat	e rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection of control	rev/min Control rod travel mm	travei C	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deffection of control lever	rev/min	Control rod travel mm 3		0
ca. 27	9,0	750-755 770-785	-	•	-	- 3e	-	-	•	•

Torque control travel a =

# C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		limitation intermediate speed	Fuel delh high idle s	rery characteristics (5e)	Starting Idle switchin	. •	Torque- travel	Control 5 Control rod	
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
1)750	79,5-81,5 (77,5-83,5)	750-755*	-	-	100	120,0-130,0 = 13,8-14,5	-	-	
2)750	93,5-95,5 (91,5-97,5)					mm RW			
						,			

Checking values in brackets

 1 mm less control rod travel than col. 2 5.84

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 9,2 d

3. Edition

PES 5 A 95 D 410 LS2488

RQ 250/1100 AB839D (1)

LS2488Y RQ 250/1100 AB839D (2)

supersedes M A N

company D 2565 M/MF
engine (192 PS -1)

(168 PS -2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Rump Settings

Port closing at prestroke

0.45-1.65

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm 1/100 strokes	100 strokes	mm	cm 1/100 strokes	mm
1	5	3	4	2	3	6
1100	11,2+0,1	11,8 - 12,0	0,3(0,6)	9,9+0,1	10,0 - 10,3	<u> </u>
250	5,9-6,1	1,4 - 1,9	0,3 (0,5	5,9-6,1	1,1 - 1,7	

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

(1)

Checkin	g of slider	Full-load:	speed re	gulation		idle spec	ed regula	ition		Torque o	control
rev/min 1	Control rod	Setting portion of the setting portion of the	Control rod travel mm	rev/min	cifications Control rod travel mm 6	Setting property of the settin	Control rod travel	rev/min 9	10	rev/min	12
600	15,6.16,4	600	16,0	1100 1150 1200 1250	15,1-15,4 9,0-14,0 0 - 7,2 0 - 1,5	540	0	200	6,9-8,1 5,6-7,6 3,3-5,5 0 - 1	1	15,8-16,0 15,3-15,5

Torque control travel on tlyweight assembly dimension a

mm

1145 - 11 Speed regulation At 1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel deliv	very characteristics	Starting fuel delivery		
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>1</sup> /-1000 strokes 5	rev/min	cm³/100 <b>Ø</b> rokes 7	
1100	117,5 - 119,5 (115,5 - 121,5)		800 500	116,5 - 120,5 (114,5 - 122,5) 114,5 - 108,5 (112,5 - 120,5)	100	116,5 - 126,5 = 13,7-14,3 mm RW	
						./.	

Checking values in brackets

5.84

BOSCH

Checkin PRG che rev/min 1	ck Control rod travel	Full-load : Setting po rev/min 3			rev/min	rev/min	Control   Control   red travel		cifications 5 Control rod travel mm	rev/min	Control (3) Control rod travel mm
600	15,6-16,4	600	16,0	1100 1150 1200 1250	15,1-15,4 9,0-14,0 0 - 7,2 0 - 1,5		0	100 200 300 500	6,9-8,1 5,6-7,6 3,3-5,5 0 - 1		15,8-16,0 15,3-15,5

Torque-control travel on flyweight assembly dimension a =

0,2 <sub>mm</sub> Speed regulation At 1145-1160 =

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop 3a	Fuel deliv	ery characteristics	Starting f Idle spee	Control
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes / mm
1100 99,0-101, (97,0-103,	99,0-101,0		800	100,5 - 104,5	100	119,0 - 124,0
	(97,0-103,0)		500 95	(98,5 - 106,5) 95,0 - 99,0 (93,0 - 101,0)	250	6,0 mm RW
				i 1		
				!	į	

Checking values in brackets

Testoil-ISO 4113

**B.** Governor Settings

Checking of sli PRG check Conti trave rev/min 1	rol rod	Full-load s Setting po rev/min 3	•	-	rev/min	Setting rev/min 7	Control rod travel	cifications 5 Control rod travel mm	Control rod (3) travel mm

Torque-control travel on flyweight assembly dimension a -

Speed regulation At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test on temp 40°C (104°F)		Control rod stop 3	Fuel delivery characteristics			Starting for Idle spee	d Centrel red travel	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2		rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
						<del></del>	: 	

En Checking values in brackets

#### **Test Specifications** 2 Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 d 1

Edition

PES 5 A 95 D 410 LS2488Z

RQ 250/1100 AB839DL

engine D 2565 MSFV 137 kW (186 PS)

Komb.-Nr. 0 400 845 033 1 - 3 - 5 - 4 - 2 je  $72^{\circ \pm 0}, 5^{\circ}$  ( $\pm 0, 75^{\circ}$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(1.45-1.65)

mm (from BDC)

	(-)	.0 2,00/	<del> </del>			<del></del>
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>1</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>1</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
] 1	2	3	4	2	3	6
1100	11,0+0,	11,7 - 11,9	0,3 (0,6)			
			0.240.5			
250	5,3-5,5	1,2 - 1,7	0,3(0,5)			
ļ				ļ		
1	1	1		1	. P	

Adjust the fuel delivery from each outlet according to the values in 1

#### **B.** Governor Settings

Checkin	g of slider	Full-load	speed re	gulation		idle spec	ed regula	ation		Torque d	control
rev/min	Control rod travel mm	Setting por rev/min 3	Control   rod travel   mm   4	Test spec rev/min 5	cifications Control rod travet mm 6	Setting previous	Control rod travel		cifications Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	l *	1145-1160 1175-1205	250	5,4	250	mind.6,9 5,3-5,5 360 = 2,0	800	11,0-11,1 11,3-11,5 11,5-11,6
			<u> </u>	<u></u> _	L	<u> </u>		L.,	1160 =	L_4	1 1000 000144

Torque-contrôl travel on flyweight assembly dimension a 0,2

Speed regulation At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	control tever	Control rod stop	Fuel deliv	ery characteristics	Starting	Starting fuel delivery		
rev/min	mp 40°C (104°F)   cm³/-1000 strokes   2	rev/min	rev/min	cm³/-1000 strokes 5	rev/min	cm³/100 strokes 7		
1100	116,5 - 118,5 (114,5 - 120,5)		800	114,5 - 118,5 (112,5 - 120,5)	100	120,0-130,0 (117,0-133,0) = 13,5-14,5		
			500	111,5 - 115,5 (109,5 - 117,5)	250	mm RW 6,0 mm RW		

Checking values in brackets

5.84

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2

## Test Specifications. **Fuel Injection Pumps** and Governors

WPP 001/4 0MB 8,1 a 1

2. Edition

Festoil-ISO 4113

PES 6 A 90 D 410 RS 2494 Komb.-Nr. 0 400 846 396 RO 275/1300 AB 969 DL

0M-Brescia company 8360.05, 200 engine 118 kW (160 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,10-2,30)

mm (from BDBW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm 1/100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	13,2+0,1	8,0 - 8,1	0,3(0,45)			
275	8,3-8,5	0,4-0,9	0,45(0,4)			

**B.** Governor Settings

Checkini	g of slider	Full-load	speed re	gulation	:	Idle speed regulation				Torque control		
	Control rod travel mm	Setting p	Control rod travel mm	Test spe-	cifications Control rod travel mm	Setting prev/min	Control rod travel rom 8		cifications Control rod travel mm 10	rev/min	Control rod travel mm	
900	13,6-15,0	900	14,3	12,2 4,0 1600	1345-1360 1440-1470 0 - 1,0		5,8	275	min. 7,3 5,7-5,9 480=2,0mm max. 1,0	700 500	13,2 + 0, 13,6+0,2 14,0+0,1	

Torque-contrôl travel on flyweight assembly dimension a

Speed regulation 1345-1360 min<sup>-1</sup>

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever mp_40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting t	fuel delivery			
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 <b>G</b> rokes 7			
1300	80,0 - 81,0 (78,0 - 83,0)	-	700 500	77,5 - 80,5 (75,5 - 82,5) 71,5 - 74,5 (69,5 - 76,5)	100	110,0-120,0 (107,0-123,0)			

Checking values in brackets

5.84

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2

Testoil-ISO 411

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 OMB 8,1 a

2. Edition

Er

PES 6 A 90 D 410 RS 2494

RQ 275/1300 AB 1034 DL

supersedes 5.81

Komb.-Nr. 0 400 846 426

company OM-Brescia 8360.05.291 103 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20

mm (from BDRW = 9.0-12.0 mm

Port closing at presi	IIONE	(2,1-2,3)			7	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
		7.05 7.15				1
1300	12,4+0,	7,05 - 7,15	<b>-</b>  0,3(0,45)	)		
275	8,3-8,5	0,4 - 0,9	0,2(0,4)			
•	,,,,,,			1		ļ
			İ	1		

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings** 

Checkini	g of slider	Full-load	speed re	gulation		idie spec	ed regula	ition		Torque c	ontrol
	Control rod	Setting princes/min	Control red travel mm		cifications Control rod travel mm 6	Setting prev/min 7	Control rod travel		cifications Control rod travel mm 10	rev/min	Control rod travel mm 12
700	15,6-16,4	700	16,0		1345-1360 1450-1480 0 - 1,0		6,0	275 465	min.7,5 5,9-6,1 505=2,0mm max. 1,0	810 710 600	12,4+0,1 12,6+0,3 13,3+0,1 13,4+0,2

Torque-contrôl travel on flyweight assembly dimension a

4 \_\_

Speed regulation 1345 - 1360 min<sup>-1</sup>

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor of Test oil ten	elivery on control tever np 40°C (104°F)	Control rod stop	Fuel deliv	rery characteristics	Starting	uel delivery
rev/min	cm <sup>1</sup> /-1000 strokes 2	rev/min 3	rev/min	cm³/-1000 strokes 5	rev/min 6	cm³/100 strokes
1300	70,5 - 71,5 (68,5 - 73,5)	500	700 500	71,5 - 74,5 (69,5 - 76,5) 65,5 - 68,5 (63,5 - 70,5)	-	-

Checking values in brackets

5.84

BOSCH

WPP 001/4 MAN 16,0 c 2

3. Edition

PE 10 A 95 D 520/5 LS 2501 Komb.-Nr. 0 400 649 204

RO 250/1150 AB1035 DR

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 0 - 45 - 72 - 117 - 144 - 189 - 216 - 261 - 288 - 333  $^{\circ}$   $^{\circ}$   $^{\circ}$   $^{\circ}$   $^{\circ}$   $^{\circ}$   $^{\circ}$   $^{\circ}$ 

supersede8.80 companyMAN engine D2530MTXE

265 kW (360PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(1,65-1,85) 1,70-1,80 Port closing at prestroke

mm (from BDC) 7v1 10

		9/U-190U		<del></del>		
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	Cm-1100 attores	1
1	2	3	4	2	3	6
·						
1150	11,40,1	11,8 - 12,0	0,3(0,6)			
				ļ		
250	5,9-6,1	1,5 - 2,1	0,3(0,5)			
					Ì	
				}		
			1	1		
				1		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG che	Control rod travel	Full-load s Setting po rev/min 3			cifications (4)	ten/wiu	Control rod travel	Test spe	cifications 5 Control rod travel	rev/min	Control rod (3)
600	19,2-20,8	600	20,0	10,4	1195-1210	250	6,0	100	min.7,5	1150	11,4+0,1
VH =	max. 46°			4,5	1270-1300			Í	5,9-6,1 75=2,0	930 865 600	11,540,3 11,840,2 11,940,1

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 1195-1210 min<sup>-1</sup>

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d	elivery on control lever np 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting for Idle spee	uel delivery d Contra
rev/min	cm³/-1000 strokes	vev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min	red travel cm <sup>3</sup> /1000 strokes:// mm 7
LDA 1150	0,5 bar 117,5 - 119,5 (115,5 - 121,5)		LDA 700 LDA 500	0,5 bar 119,5 - 122,5 (117,5 - 124,5) 0 bar 76,5 - 79,5 (74,5 - 81,5)	100 250	170,0-180,0 (167,0-183,0) 6,0 mm RW

Checking values in brackets

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

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Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
2501 with 1035 (	OL 0,50		11,9 - 12,0
		0,26	11,6 - 11,7
		0,18	10,7 - 11,0
		0	10,1 - 10,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

-2-

estoil-ISO 4113

and Governors

2. Edition

PE 10 A 95 D 520/5 LS 2501 RQ 250/1250 AB 1036 DR

supersedes 8.80

Komb.-Nr. 0 400 649 205

company. D 2530 MTXE 294 kW (400 PS) engine

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4 0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315° + 0,5° (+0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) Zy1. 10

(torque-control valve)	Fuel delivery cm <sup>3</sup> /100 strokes 3	Co tra mi		Differe cm³/ 100 sti 4		:s		-	Fuel del cm <sup>3</sup> /100 3	1	Control root travel mm 2	lotational speed ev/min
		;) <u> </u>	(	0,3		13,1		, 9 -	12,	0,	12,7+0	1250
		5)	(	0,3	5	1, 6	•	, 0 -	1,	,6	6,4-6,	250
_												

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	g of slider	Full-load	•	•	cifications (4)	Idle spec	-		cifications (5)	Torque control  (3)		
PRG che rev/min 1	Control rod travel	Setting portion rev/min	Control red travel mm	Control rad travel mm	rev/min	rev/min	Control red travel mm	rev/min 9	Control rod	rev/min	Control rod (travel	
000 = 11V	19,2-20,8 max.46°	600	20,0		1295-1310 1365-1395	250	6,5	100 250	min. 8,0 6,4-6,6	-	-	
				1500	0 - 1,0	,		340- 450	380 2,0 max. 1,0			
	control travel ight assembly dimer	nsion a =	-	mm	Spe	ed regula	1 2 ation: At	<u> </u> 295 <b>-</b> 1	310 min <sup>-1</sup>	<u> </u>	1 mm less contro rod trave	

#### C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	] Contri		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:// mm 7	
LDA 1250	0,5 bar 128,5 - 130,5 (126,5 - 132,5)		10A 750 10A 500	0,5 bar 122,5 - 125,5 (120,5 - 127,5) 0 bar 76,5 - 79,5 (74,5 - 81,5)	100 250	170,0-180,0 (167,0-183,0) = 18,2-18,8 mm RW 6,5 rm RW	

Checking values in brackets

Test at n =

1250

rev/min decreasing pressure - in bar gauge pressure

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	g		
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2501 with 1036 DR	0,50		12,7 - 12,8
		0,28	12,4 - 12,5
		0,18	11,2 - 11,5
		0	10,2 - 10,3

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 0MB 7,4 b 1 and Governors

2. Edition

PFS 6 A 90 D 410 RS 2502

ROV 250-1300 A B 1071 DL

supersedas 80 compandB engine 8360.05.300

Komb.-Nr. 0 400 846 442

1 - 5 - 3 - 6 - 2 - 4 0 - 60 - 120 - 180 - 240 - 300 ° 0 + 5 ° (0 + 75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(2 10-2 30)

mm (from BDC) RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,2-12,3	8,4-8,5	0,3(0,45			
250	9,9-10,1	2,9 - 3,3	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in [

Testoil-ISO 4113

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
deflection	rev/min Control	Control rod travel	Degree of deflection	ļ	Control rod travel	Degree of deflection of control		Control rod travel		0
	rod travel	rev/min (2s)	of control	rev/min	mm (4)	lever	rev/min	mm ③	rev/min	mm
1	2	<b> </b> 3	4	5	6	7	8	9	10	11
ca.66	1350	15,0-17,6				ca.21	100 250	min.11,5 9,9-10,1	F70	0,4-1,5 3,2-3,8
	ļ			ĺ	ļ		Ì	•	930	5,1-5,5
- 62	44.2	1240 1250	1	l			780-8	340=2,0	1300	7,9
ca.62	11,3	1340-1350		i	•	250-70	Ь			
	4,0 1600	1465-1495					Ţ			
i	1,000	0 - 1,0				38			<u> </u>	<u></u> i

0.2 mm Torque contról travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr		Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics (5a)	Sterting idle switching	. •	Torque- travel	Control rod
rey/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm
	84,0 - 85,0 (82,0 - 87,0)	1340-1350 *	800 500	82,0 - 85,0 (80,0 - 87,0) 74,0 - 76,0 (72,0 - 78,0)	100	112,0-124,0 (109,0-127,0 = 16,0-16,6 mm RW	1000 700	

Checking values in brackets

1 mm less control rod travel than col. 2

①

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 0MB 8,1 b

En

PES 6 A 90 D 410 RS 2502 Komb.-Nr. O 400 846 483 RQV 425-1100 AB 1153 L

supersed&.82 company0M engine: 8365.05.520

oiHSC 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm³/100 strokes 3	mm 6
1100	11,9+0,1	7,8 - 7,9	0,3(0,45			
425	8,0-8,2	0,9 - 1,5	0,2(0,4)			
	ĺ	ļ		}	1	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed		Stiding sleeve travel	
Degree of deflection	rev/min Control	Control rod travel	Degree of deflection		Control rod traval	Degree of deflection		Control rod travel		. ①
of control lever	rod travel	mm rev/min (28	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8	-	-	•	ca. 16	•	min.9,5 8,0-8,2	400 630	0,8-1,0 4,3-4,5
ca.65		1140-1150 1220-1250 0 - 1,0						max.1,0	870 1100	5,8-6,0 8,0
						39				L

Torque control travel a = 0.3 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roa Test oil ten		Rotational-speed 20 limitation intermediate speed	Puel delivery characteristics (Se) high idle speed (So)			fuel delivery 6	Torque-control (5 travel Control ro		
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes 7	rev/min 8	travel mm	
1100	77,5-78,5 (75,5-80,5)	1140-1150*	650	75,0-78,0 (73,0-80,0)	100	128,0-148,0 125,0-151,0 = 18,2-18,6 mm RW	500	11,9+0 12,2+0 12,1+0 11,9+0	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

 $\odot$ 

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 0MB 8,1 b 1

2. Edition

PES 6 A 90 D 410 RS 2502 Komb.-Nr. 0 400 846 484 RQV 300-1050 AB 1157 L

companyOM\_Fiat
engine: 8365.05.590
Schlepper

estoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

2.15-2.25

#### A. Fuel Injection Pump Settings

Port closing at pre	stroke	(2 1h 2 30)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1050	11,5+0,	7,6 - 7,7	0,3(0,45)			
300	8,2-8,	0,9-1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

peed		Intermediate	e rated sp	eed	Lower rated	speed	•	Sliding steeve travet	
rev/min Control	travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1 ①
nm mm	rev/min (2a)	lever	rev/min	mm (4)	jever	rev/min	mm ③	rev/min	mm
2	3	4	5	6	7	8	9	10	11
1110	15,2-17,8	-	-	-	ca. 20	100	min. 9,8	250	1,0-1,2
10.5	1000 1100	†	j	Ì		300	8,2-8,4	520	4,2-4,4
					İ	ľ		780	5,6-5,8
1300					775 100	675	max.1,0	1050	7,8
					(3a)	1			
	rev/min Control rod travel mm 2 1110 10,5 4,0	rev/min Control rod (a) travel rod travel rod travel mm rev/min 2 3 1110 15,2-17,8 10,5 1090-1100 1170-1200	rev/min Control rod (a) reavel rev/min (control reavel mm rev/min 2 3	Control   Control rod   Control reversion   Control	Control rod   Control rod	Control rev/min   Control rod   (a)   Degree of deflection of control rev/min   (a)   Degree of deflection of control lever   (a)   Tev/min   (b)   Tev/min   (c)   Tev/min	Control   Control rod   Control rod   Control rod   Control   Co	Control rod   Control rod	Control rod   Control rod

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel delic high idle s	rery characteristics (5e)	Starting Idle switchli	. •	Torque- travel	Control cod
rev/mm	cm³/1000 strokes	rev/min 4a	revimin	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	tev/min	
1	2	3	4	5	3	7	8	9
1050	76,0-77,0 (74,0-79,0)	1090-1100*	650	730-76,0 (71,0-78,0)	100	128,0-148,0 (125,0-151,0 =18,2-18,6 mm RW	) 500 755	11,5+0, 11,9+0, 11,8+0, 11,5+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.84

0

**BOSCH** 

Geschäftsbereich KM. Kundendienst. Kfz-Ausrustung c. by Robert Bosch GmbH. D-7 Stuttgart 1, Posifach 50. Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Allemegne par Robert Bosch GmbH.

## **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 f 3. Edition "

Testoil-ISO 4113

PES 5 A 95 D 320 LS2504

RQ 250/1100 AB917DR (1) company M A N

supersedes 9.76

LS2504Z RQ 250/1100 AB968DR (2) engine

D 2565 MUL (192 PS - 1)

1 - 3 - 5 - 4 - 2 = 0 - 72 - 144 - 216 - 288° ±0,5°(±0,75°)

(168 PS - 2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(1.45-1.65) Port closing at prestroke

mm (from BDC)

Rotational speed   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Fuel delivery   Control rod travel   Co			( + ;	73-1,037			granda and the second of the s	<b>†</b> .
rev/min 1 2 3 100 strokes 4 100,3(0,6) 100,1+0,1 100 strokes 2 3 1100 11,3+0,1 11,4-11,6 0,3(0,6) 10,1+0,1 9,6-9,8		1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0		. del delivery		-	Fuel delivery	Spring pre tensioning (torque control valve)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Į	rev/min	mm	i i		mm	cm <sup>1</sup> /100 strokes	mm
		1	2	3	4	2	3	6
250 6,4-6,6 1,5-2,1 0,4(0,5) 5,9-6,1 0,8-1,4		1100	11,3+0,1	11.4 - 11.6	0,3(0,6)	10,1+0,1	9,6 - 9,8	
250 6,4-6,6 1,5-2,1 0,4(0,5) 5,9-6,1 0,8-1,4								
		250	6,4-6,6	1,5 - 2,1	0,4(0,5)	5,9-6,1	0,8 - 1,4	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								

Adjust the fuel delivery from each outlet according to the values in 1 2 2 2

#### **B. Governor Settings**

917DR (1)

Checking of slider	Full load speed r	egulation	Idle speed regula	ation	Torque control
Control rod travel mm 1 2 600 15,6-16,4	Setting point Control rev/min mm 3	Test specifications  Control rod		rest specifications Control rod fravel mm 9 10  100 mind. 7,3 250 5,6-5,8 340- 400=2,0 450 max.1,0	800   11,5-11,7 500   11,7-11,8

on flyweight assembly dimension a

Speed regulation At

rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on	Control rod stop	Fuel deliv	ery characteristics	Starting (	uet delivery
governor Test oil te	control lever mp 40 C (104 F)		ļ			
rev/min 1	cm <sup>1</sup> /- 1000 strokes	rev/min 3	rev/min	cm <sup>1</sup> /-1000 strokes 5	rev/min 6	cm <sup>1</sup> /100 strokes 7 mm RW
1100	114,0 - 116,0 (112,0 - 118,0)		800 500	111,0 - 115,0 (109,0 - 117,0) 108,5 - 112,5	100	13,7-14,3
			500	(106,5 - 114,5	250	6,5
				(100,5 - 114,5		

Checking values in brackets

5.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.
1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fedérale d'Allemagne par Robert Bosch GmbH.

B24 En Checking values in brackets

# Test Specifications Fuel Injection Pumps ① WPP 001/4 MAN 16,0 d and Governors 7. Edition

PE10A90D520/5 LS 2515

RQV 250-1250 AB993DR RQ 250/1250 AB832DR ./. RQ 250/1250 AB992DR ./. supersed 80 company MAN engine: 0 2530 MF

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2 $0 - 45 - 72 - 117 - 144 - 189 - 216 - 261 - 288 - 333° <math>\stackrel{+}{-}0,5°(0,75°)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1,45-1,65)

mm (from BDC)

Zy1. 10

Rotational speed rev/min 1	Control red travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5-11,	6 10, 1 - 10, 3	0,3(0,45)	11,5-11,	10,3-10,4	
250 800/500	9,0-9,2	0,9- 1,5 C, 4-5 -	0,2(0,4) 0,4(0,55)		0,9- 1,5	
·				_		

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

#### **B. Governor Settings**

RQV..993 DR

Upper rated	epeed	_		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	Control rod travel	Control rod travel mm rev/min		deflection of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel		1
ca.50	1275 1450	14,4-17, 0 - 1	4	-	-	-	ca.13	100 250 310-3	min.7,2 5,6-5,8 70 = 2,0	200 700 270	0,5-1,2 4,4-4,8 8,3
ca.48	10,5	1290-13 1365-13						450	0 - 1		
		0.6.0					39				

Torque control travel a = 0,6+0, mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Ilmitation intermediate appead	high idle s	rery characteristics (5e)	Starting Idie switchin	• , •	Torque- travel	control (5) Control rod travel
rev/min cfh³/1000 strokes		rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm .
1	2	3	4	5	6	7	8	9
1250	102, 4-103, 5	1290 - 1300*	800	95,5- 98,5	100	134, 25-144,25	1250	11,5
	(100, 5-105, 5)			(93, 5-100, 5)	250	7,0 mm RW	900	12,0
			500	90,0- 94,0			500	12,3
1				(88,0- 96,0)	100-	170 (80-190)		./.
						•		l

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Checking	g of slider	Full-load	•	•	cifications (4)	idle spe	•		cifications (5)	Torque	control 3
	Control rod travel	rev/min	Control rod travel rmm	Control red travel mm	rev/min	rev/min	Control red travel	rev/min	Control rod travel	rev/min	Control rod (travel
600	15,6-16,4	600	16,0	10,5	1295-1310 1345-1375	ì	6,1	100 250	min.7,6 6,0-6,2	-	-
1250	15,6-16,0							360- 500	20 =2,0 0 - 1		
1500	0 - 1		<u></u>								
	ontrol travel ght assembly dimer	nsion a	0	mm	Spe	ed regula	ation At	1295-	1310 min	•	1 mm less contro rod trave

on flyweight assembly dimension a C. Settings for Fuel Injection Pump with Fitted Governor

	letivery on control lever np 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics 3b	Starting f	Control
:ev/min 1	cm '/- 1000 strokes 2	rev/min 3	rev/min	cm <sup>4</sup> /-1000 strokes 5	rev/min 6	cm <sup>1</sup> /1000 strokes / mm
1250	101,5 - 102,5 ( 99,5 - 104,5)		500	78, 0 - 86, 0 (76, 0 - 88, 0)	100 250	129,25 - 139,25 7 mm RW

Checking values in brackets

Testoil-ISO 4113

**B.** Governor Settings

RQ..992 DR

Checkin	g of slider	Full load	•			Idle spe	-			Torque o	
PRG che	Control rod	Setting por	Control rod travel rnm	Test spec Control rod travel mm	rev/min	Setting prev/min	Control rod travel mm		cifications (5) Control rod travel mm	rev/min	Control rod (3) travel mm
600	15,6-16,4	600	6,0	0,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	1000	11,8-12,0
				1500	0 - 1,0			360-4 500	00 =2,0 0 - 1	600	12,2-12,4
	ontrol travel ght assembly dimer	nsion a =	0,35	mm	Sp	eed regula		  295-1	310 min	<b>1</b>	t mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

np 40°C (104°F)	i	l		ļ	Control
cm <sup>1</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	red trave cm <sup>3</sup> /1000 strokes / mm 7
102, 5 - 103, 5 (100, 5 - 105, 5)		800	95,5 - 98,5 (93,5 - 100,5)	100	135,0-145,0 (132,0-148,0) = 18,3-19,3
		500	90,0 - 94,0 (88,0 - 96,0)	250	nm RW 7,0 mm RW
	102,5 - 103,5	2 102,5 - 103,5	3 4 102,5 - 103,5 (100,5 - 105,5) 800	3 4 5 102,5 - 103,5 (100,5 - 105,5) 800 95,5 - 98,5 (93,5 - 100,5) 500 90,0 - 94,0	102, 5 - 103, 5 (100, 5 - 105, 5)  800  95, 5 - 98, 5 (93, 5 - 100, 5)  500  90, 0 - 94, 0

Checking values in brackets

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 DAF 8.3 i 3 5. Edition

825

En

**[estoil-ISO 4113]** 

RSV 250-750 A 7 B 2124 L PE 6 A 90 D 410 RS 2524 Komb.-Nr. 0 400 676 165

supersedes, 82 company DAF engine DH

Cold-start test on EP/RSV governor according to Service Information VDT-I-420/114. Specifications apply to test tubing 1 680 750 015.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,25-2,4 2,30-2,40

mm (from BDC)

RW = 9.0 mm

	2,30-2,40				
Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
2	3	4	2	3	6
9,4-9,5	7,7 - 7,9	0,4(0,55)			
6,3-6,5	1,8-2,4	0,2(0,4)			
		Port closin 9 and max.			control-rod trave
	mm 2 9,4-9,5	Control rod travel  mm cm³/100 strokes 2 3  9,4-9,5 7,7 - 7,9	Control rod travel  mm cm³/100 strokes 2  9,4-9,5  7,7-7,9  0,4(0,55)  6,3-6,5  1,8-2,4  Port closin	Control rod travel	Control rod travel

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed	<del></del>	Intermediate	rated spe	ed		r rated spe		3 Tor	que control
Degree of deilection of control lever	rev/min	Control red travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm 11
	800	0,3-1,0	-	•	-	ca. 16	250	6,4	_	-
loose	x =	3,25					100 250	min.19,0 **		
§30a. 40		80 = 8,4 05 = 4,0					260-	20=2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-l	oad stop	6 Rotational- speed limitat.		el delivery tracteristics	Starting Idle	fuel delivery	5a Idle stop		
Test oil ten rev/min 1	1 -	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
750	77,0 - 79,0 (75,0 - 81,0)	760-770*	-	-	100	19,5-21,0 mm RW		-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Set idle-speed auxiliary spring at 2,0 mm control-rod travel. then 1/2 turn back.

## **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 OMB 7,4 b 2

and Governors

2. Edition

Festoil-ISO 4113

PES 6 A 90 D 410 RS 2566 Komb.-Nr. 0 400 846 435 ROV 300-1400 AB 1053 DL

supersedes 80 compan DMB engine: 8360.04.300

1 - 5 - 3 - 6 - 2 - 4  $0 -60 -120 -180 -240 -300 ^{\circ} -0,5 ^{\circ} (-0,75 ^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,15-2,25
Port closing at prestroke
(2,10-2,30) mm (from BDC)

Rotational speed rev/min		Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8-10,9	7,3-7,4	0,3(0,45)			]
300	8,4-8,6	1,1 - 1,7	0,2 (0,4)			
				: !		
	]				<u> </u>	

Adjust the fuel delivery from each outlet according to the values in.

#### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
Degree of deflection of control lever	Control rod travel	Control rod travel mm rev/min 3	( <b>9</b> )	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/m <del>i</del> n B	Control rod travel mm 3	rev/min	① mm 11
max•	1400	15,2-17	,8				ca.15		min.10,0 8,4-8,6 685=2,0	630 1020	0,6-1,0 3,7-4,2 5,3-5,4
ca.59	9,8 4,0 1750	1440-14 1585-16 0 - 1,	15				375 <b>-</b> 475	800	max.1,0	1400	7,3

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		limitation intermediate speed		ivel deliv ligh idle s	ery characteristics (50) peed (50)	Starting idle switchir	• . •	Torque- travel	control 5  Control rod travel
rev/min	cm³/1000 strokes	rev/min	49 7	ev/min	cm <sup>2</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4		5	6	7	8	9
1400	72,5 - 73,5 (70,5 - 75,5)	1440-1450	1	500	66,5 - 69,5 (64,5 - 71,5) 62,5 - 65,5 (60,5 - 67,5)		115,0-125,0 112,0-128,0 = 16,2-16,8 mm RW	825 675	10,8-10,9 10,8-11,1 11,0-11,2 11,1-11,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

①

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 6,1 k 3

4. Edition

PES 6 A 85 D 410/3 RS 2592 Komb.-Nr. 0 400 836 028

RQV 300-1250 AB 1188 L

companBF 6 L 913 engine 118 kW/2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pre		2 15-2 35)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (forque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1250	12,0+0,1	8,9-9,0	0,3(0,5)			
300	6,9-7,1	0,9-1,5	0,25(0,4	<b>5</b> )		
1	ł	l l		ŀ	1	

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1290	15,2-17	,8	-	-	-	ca. 13	300		325 850	1,5-1,7 4,9-5,1
ca. 65	11,0 4,0	1290-13 1375-14					355-470			1150 1400	7,1-7,3 9,9
							<b>③</b>				

Torque control travel a = 0,8

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil te	od stop	Rotational-speed 2b limitation intermediate speed	itation smediate speed thigh idle speed to witching point		Torque- travel	Control roc		
rev <i>l</i> min	cm³/1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm
LDA 1250	0,7 bar 88,5-89,5 (86,5-91,5)	1290-1300*	LDA 800 LDA 500	0,7 bar 85,0-88,0 (83,0-90,0) 0 bar 59,0-61,0 57,0-63,0)	100	110,0-120,0 (107,0-123,0) =17,1-17,5 mm RW	500 775	12,0+0, 12,8+0, 12,5+0, 12,1+0,

Checking values in brackets

\* 1 mm less control rod travel then col. 2

#### - 2 -

### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 6,1 k 3

Pum://governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2592 + RQVAB 1188 L		0 0,26 0,19	12,8-12,9 10,9-11,1 12,4-12,5 11,9-12,1
	• :		

Notes

(1) when n =

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

En

## Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 RAB 9,7 b

2 Edition

PES 6 A 95 D 420 LS 2595 Komb.-Nr. 0 400 846 514

RQ 200/1100 AB 1094-1 R

supersede 3.83 company RABA D 2356 HM 6 U 162 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

roit ciosing at pres	(	1,95-2,15)	· · · · · · · · · · · · · · · · · · ·			
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	12,1-12,3	0,3(0,6)			
200	6,0-6,2	0,8-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin PRG che	g of slider	Full-load : Setting po	•	-	cifications (4)	idle spec	_		cifications (5)	Torque o	control 3
rev/min	Control rod travel mm 2	rev/min 3	Central rad travel mm 4	Central red travel rnm 5	zev/min	rev/min 7	Control red travel mm 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod (
550 VH =	19,2-20,8 max. 46°	550	20,0		1145-1160 1175-1205		6,0	100 200 290- 350	5,9-6,1	1100 500 750 855	11,3-11,4 11,9-12,0 11,7-11,9 11,5-11,7
Torque:C	ontrol travel		0,	3			1	145-1	160 min-1	<u> </u>	1 mm less contro

Torque-control travel on flyweight assembly dimension a = 0,3

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Constrol rod stop 3	Fuel delive	ery characteristics 3b	idle spee	Control
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min '	Con 21000 Strokes William (1)
1100	121,0-123,0 (119,0-125,0)	500	800 500	119,0-125,0 (116,5-127,5) max. 117,0 (max. 119,)	100	17,5-18,1

Checking values in brackets

## **Test Specifications** Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v 2

Edition

Testoil-ISO 4113 PES 6 A 90 D 410 RS 2596 Komb.-Nr. 0 400 846 443 ROV 300-1400 AB 1066-1DL

superseilles. 81 companyDaimler-Benz om 352 A 126 kW (171 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	stroke	2.00-2.10	mm (from BDQ)	W=9,0-12	,O mm	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1400	12,4 <sup>+0,1</sup>	7,4-7,5	0,3(0,45)			
300	8,9-9,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
deflection of control	rev/min Control rod travel mm 2	Control rod travel mm rev/min 2a	Degree of deffection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	0
max.	1500	15,2-17,8	•	-		ca. 23	109 300	min.10,5 8,9-9,1		1,2 2,5-2,7 8,6
ca.63	11,4 4,0 1750	1440-1450 1580-1610 0 - 1,0				590-660 ③				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter rev/min	d stop np. 40°C (104°F) 2	Rotational speed (2b) limitation intermediate speed rav/min (4a)	high idle s	cm <sup>3</sup> /1000 strokes	idle switchli	. •	Torque- travel rev/min 8	Control 5  Control rod travel mm
LDA 1400	0,7bar 74,0 - 75,0 (72,0 -77,0)	1440-1450*	LDA 500 LDA 500	0,7 bar 69,0-71,0 (66,5-73,5 0 bar 54,0-56,0 (51,5-58,5)		73,0-83,0 (70,0-86,0) = 15,8-16,2 mmRW 220 (80-240)	1200	13,1+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6A RS 2596 with AB1066-1DL	0,70	0 0,35 0,20	13,6 - 13,7 12,3 - 12,4 13,2 - 13,3 12,5 - 12,7

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 5,7 v 12

3. Edition

PES 6 A 90 D 410 RS 2596 estoil-ISO 4113

RSV 350-1200 A0B 1148 L

Komb.-Nr. 0 400 876 310

supersede 6.83

company: Daimler-Benz

OM 352 A

110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump, Settings

Port closing at prestroke

(1.95-2.15)

mm (from BDC+ RW 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1180	12,0+0,1	7,0 - 7,1	0,3(0,45)			
350	8,6-8,7	1,2 - 1,6	0,2(0,4)			
				•		
		,			1	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper	rated speed	)	Intermediate	rated spe	ed	4 Lowe	rated spe	ed	3 Tor	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	re√/min 5	Control rod travel mm	Degree of deflection of control lever 7	rev/min	Control rod travel mm 9	rev/min	Control rod travel
	800	0,3-1,0	-	-	-	lose			1200	12,2-12.
loose	х	5,0						min.19,0		13,2-13.
ca.62	11,0	1220-1230	•			5		8,1 <b>-</b> 8,3 = 2,0	950	12,6-12,
(5)	4,0 1410	1335-1365 0,3-1,7				,				

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ad stop	6 Rotational- speed limits:		el delivery aracteristics	Starting Idle	fuel delivery	Se Idi	e stop
Test oil tem rev/min 1	o. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 70,0-71,0 (68,0-73,0)	1240-1250*	LDA 600 LDA 500	0,7 bar 69,0-71,0 (66,5-73,5) 0 bar 51,0-53,0 (48,5-55,5)	100	78,0-88,0 (75,0-91,0) = 16,1-16, mm RW	5	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

C10

### D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 v 12

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel d	liminution litterence
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .	
PES 6 ARS 2596	0,70		13,0 - 1	13,1
with AOB 1148 L		0	11,6 - 1	11,7
		0,45	12,6 - 1	12,7
		0,24	12,0 - 1	12,2
	1	1	ł	

Notes

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at Unlocking at

0.75 - 0.85 bar 0.25 - 0.35 bar

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 4,7 c 3. Edition

En

PES 5 A 80 D 410/3 RS 2603 RS 325/1650 A 0 B 2087 L

Komb.-Nr. 0 400 865 023

supersedes company engine 3.83 KHD F 5 L 912 54 kW (73 PS) 3000 min-1

(A power output)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)

mm (from BDC)

Testoil-ISO 4113

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm¥100 strokes	cm³/ 100 strokes	mm 2	cm <sup>9</sup> /100 strokes	mm 6
1500	9,9-10,0	5,1 - 5,2	0,2(0,35)			
325	8,7- 8,9	1,7 - 2,1	0,2(0,3)			
			Ì			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	deflection mm rev/min		Intermediate rated speed 4 5 6		Control- tever deflection in degrees		Control rod travel rev/min 9 10		rque control Control rod travel mm		
loose	800	0,3-1,0		-	<u>-</u>	-	VH max FH ca.	325 100	8,8 min.13,6	-	-
VH ca. 28 49	8,9 4,0 1900	1690-1700 1740-1770 0 - 1,0					18	325 550-590 600	8,7-8,9 = 2,0 max.1,8		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat Sa Fuel delivery characteristics			Starting fuel delivery 5			da Idle stop		
rev/min	cm <sup>9</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>4</sup> /1000 strokes 7	rev/min 8	travel mm 9		
1490	50,5-51,5 (49,0-53,0)	1690-1700*	•	-	-	-	•	-		

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KM: Kundendienst: Kfz-Ausrustung i° 1980 by Robert Bosch GmbH: Postfach 50, D-7000 Stuttgart 1: Printed in the Federal Republic of Germany Imprimé en République Federale d'Allemagne par Robert Bosch GmbH

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 15,0 d 2

2. Edition

FE10A95D 520/5 LS 2604

ROV 250-1150AB1183 R

supersedes 83 company: MAN

Komb.-Nr. 0 400 649 239

engine:

1- 8-7- 6 - 3 - 5 - 2 - 10- 9 - 4 0-27-72-99-144-171-216-243-288-315°  $\stackrel{+}{-}$ 0,5° ( $\stackrel{+}{-}$ 0,75°) All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,65-1,85)

mm (from BDC) Zy1. 10; RW = 9.0-12.0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,5-12,7	0,35(0,6)			
250	6,9-7,1	1,1 - 1,6	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed			Intermediate	rated sp	eed	Lower rated	speed	4	Sliding s	leeve travel
deflection	rev/min Control	Control rod (		Degree of deflection		Control rod travel	Degree of deflection	i	Control rod travel		. ①
of control lever	rod travel	mm rev/min	29)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1190	15,2-17,	8	•	•	-	ca.12	100	min.8,5	200	0,5-0,7
ca.62	11,0 4,0 1400	1190-1200 1280-1310 0 - 1,0	0						6,9-7,1 160 =2,0 1	000	4,5-4,7 6,5-6,9 8,6-8,9
							<b>3a</b>				

Torque control travel a = 0,5 mm

#### C. Settings for Fuel injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle :	very characteristics (5e)	Starting Idle switchli	. •	Torque- travel	Control cod	
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm	
1150	124,5-126,5 (122,5-128,5)	1190-1200*	650 500	113,5-117,5 (111,5-119,5 max. 118,5 (max. 120,5)	100	14,9-1 <i>5</i> ,5 mm RW		12,4+0,	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 1 g 8

3. Edition

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2163 L

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 400 864 055

A 8 C 2163 L

9.83 supersedes KHD

company engine

F 4 L 913

55 kW (75 PS) 2300 min-1

Tractor DX 80

Identif. S 16

A. Fuel Injection Pump Settings

2,5-2,6 Port closing at prestroke (2,45-2,65)

mm (from BDC)

Rotational speed rev/min	Control rod travel	ravel		Control rod travel mm 2	Fuel delivery  cm\$/100 strokes	Spring pre-tensioning (torque-control valve) mm
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	9,1-9,3	1,5 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Testoil-ISO 4113

Degree of deflection of control lever	r rated speed  Control rod  travel  mm	Control rod travel mm rev/min	Intermed	diate rated	speed	Control- lever deflection in degrees	Lower rev/min 8	3 To	rque control Control rod travel mm	
loose	l	0,3 - 1,0 4,5	-	-	-	ca.19	325 100	8,7 min.19,0	1150	11,3+0,1 12,1+0,1
ca.55	10,3 4,0 1400	1190-1200 1245-1275 0,3-1,7					325 470-530	9,1-9,3 = 2,0		11,8+0,2 11,6+0,2

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	rest oil temp. 40°C (104°F) Note:		Fuel delivery characteristics		Starting I Idle	uet delivery 5	da Idle stop   Control rod		
rev/min	cm³/1000 strokes	changed to ) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm#1000 strokes 7	rev/min 8	travel mm 9	
1150	68,0-69,0 (66,0-71,0)	1190-1200*	800	65,0-67,0 (63,0-69,0)	-	-	-	-	
			500	58,0-61,0 (55,5-63,5)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KDH 1 g 4

2. Edition

PES 6 A 85 D 410/3 RS 2611 Komb.-Nr. 0 400 866 111

RSV 325-1200 A0B 2148 L AOC 2148 L supersedes company

engine

9.82 KHD F 6 L 913

DX120-S Tractor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,45-2,6 (2,45-2,65)

mm (from BDC)

	kW (114 PS)	•
1	2400 min-1	

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm\\$100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1200	11,3+0,1	6,9 - 7,0	0,3(0,45)			_
325	8,4-8,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

11 7 / ''	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control		
deflection	Control rod travel	travel				Control- lever deflection	rev/min	travel mm		travel mm	
of control lever 1	2	3	4	5	6	in degrees 7	8	9	10	11 ,	
loose	800	0,3-1,0	-	-	_	ca.30	325	8,5	1200	11,3-11,4	
	X =	4,0				•			975	11,6-11,9	
ca.54	10,3 4,0 1425	1240-1250 1315-1345 0,3-1,7					325 450-510	8,4-8,6 = 2,0**	500	11,8-11,9	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop Test oil temp 40°C (104°F)		Rotational- speed limitat		nel delivery paracteristics	Starting fidle	uel delivery 5	Control rod	
	revimin 1	cm <sup>2</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm\$1000 strokes 7	rev/min 8	mm 9
	1200	69,5-70,5 (67,5-72,5)	1240-1250*	800	63,5-65,5 (61,5-67,5)	-	<b>-</b>	-	-
٠									

Checking values in brackets

\* 1 mm less control rod travel than col 2

Geschaftsbereich KH. Kundendienst, Kfz-Ausrustung.  $\epsilon$  1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d'Allemagne par Robert Bosch GmbH.

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCL 7,4 b 3. Edition

En

**estoil-ISO 4113** 

PES 6 A 95 D 410 RS 2614

Komb.-Nr. 0 400 876 303

RSV 325-1100 A 1 B 2111 L

supersed 6.83 A 1 C 2111 L company Schlueter SDMT 110 W 6 73,6 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,75-1,95) 1,80-1,90

mm (from 80%) RW 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm 1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm <sup>-/</sup> 100 strokes	mm
1	2	3	4	2	3	6
1100	12,6+0,1	10,8 - 11,0	0,3(0,6)			
325	7,9-8,1	1,2 - 1,8	0,3(0,5)			
323	7,9-0,1	1,2	0,3(0,3)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

11. 17. "	r rated speed Control rod travel mm		Interme	diate rated	speed	Control· lever deflection in degrees 7		rated speed Control rod travel mm	3 To	rque control Control rod travel mm
100se	800 X =	0,3-1,0 5,0	-	<u>.</u>	<u>-</u>	ca. 23	325 100	7.5 min.19.5		12,6-12,7
ca. 59	1220-12	50 =11,6 250 = 4,0 0,3-1,7					325 550 <b>-</b> 610	7,9-8,1	500	13,0-13,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) fu	ili-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting (	uel delivery 5	<b>4a</b>	e stop
	emp 40°C (104°F) cm <sup>1</sup> /1000 strokes 2	Note changed to 3 rev/min	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1/</sup> 1000 strokes 7	rev/min B	Control rod travel mm 9
1100	108,0 - 110,0 (106,0 - 112,0)	1140-1150*	500	102, 5 - 105, 5 (100, 5 - 107, 5)	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. v. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Fédérale d'Altemagne par Robert Bosch GmbH.

and Governors

WPP001/4 SCL 7,4a 2. Edition

PES6A95D410RS2614

RSV325-1100A1B2177L

Lomb.-Nr. 0 400 876 315

V 224 851 V

supersedes

10.82

company engine

Schlüter SDMT 112 W6

Schlepper 110kW (150PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) bei 9,0-12,0mm RW

Control rod travel	Fuel delivery		Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm³/100 strokes	100 strokes	mm 2	cm³/100 strokes	mm 6
12,5+0,	10,4-10,6	0.3(0.6)			
8,7-8,9	2,4- 3,0	0,3(0,5)			
	mm 2 12,5+0,	mm cm <sup>3</sup> /100 strokes 2 3 12,5+0, 10,4-10,6	travel mm cm³/100 strokes 2 3 4  12,5+0, 10,4-10,6 0,3(0,6)	travel travel travel travel cm³/ 100 strokes 100 strokes mm 2 3 4 2 12,5+0,1 10,4-10,6 0,3(0,6)	travel mm cm³/100 strokes 2 3 4 2 3  12,5+0,1 10,4-10,6 0,3(0,6)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper	rated speed		Intermediate	rated spe	ed	4 Lower	r rated spe		3 701	que control
Degree of deflection of control lever	rev/min	Confrol rod fravel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0 =3,75	-	-	•	ca.22/	325	8.3	1100 500	12,5+0, 13,1+0,
	<b>,</b>					1	100 325	min.19,9 8,7-8,9	825	12,7+0.
ca.55	11,5	•	•					605=2.0		
(5)	1380	1215-1245 0,3-1,7							<u> </u>	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full to	ad stop				Starting Idle	fuel delivery	5a) Idle stop	
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>1/1000</sup> strokes 7	rev/min 8	Control rod travel mm 9
L DA 1100	0,7 bar 104,0-106,0 (102,υ-108,0)	1140-1150*	LDA 700 LDA 500	0,7 bar 108,5-111,5 106,5-113,5) 0 bar 73,5-76,5 (71,5-78,5)	100	179,5-189,5 176,5-192,5 = 19,5 - 21,0 mm RW	<b>5)</b>	- }

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than col 2

Testoil-ISO 4113

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PES6ARS2614	0,35			
withA1B2177L		0,70	12,4 -	12,5
		0	13,1 -	13,2
		0,16	11,4 -	11,5
			11,5 -	11,7

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

CAS

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 2,9 c 4

3 Edition

PES 3 A 90 D 320 RS 2626 Komb.-Nr. 0 400 873 036

RSV 300-975 A 1 B 2171-5 R A 1 C 2171-5 R supersedes\_83 Eicher EDL 3-2 40 kW

1 - 3 - 2 je 120°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 2,2-2,3 Port closing at prestroke (2,15-2,35) mm

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm <sup>-</sup> /100 strokes	mm
1	2	3	4	2	3	6
975	11,3+0,1	7,7-7,8	0,25(0,5)			
300	7,9-8,1	1,5-2,5	0,2 (0,45	1		
			İ			
	ļ					
			Ì	1		

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

11.	r rated speed Control rod travel		Intermediate rated speed		Control lever deflection		rated speed Control rod travel mm	3 to	rque control Control rod travel mm	
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
1	800	0,3-1,0	-	-	•	ca. 26	300	7,5	•	-
loose	X =	· 5 <b>,</b> 0					100	min.19,5		
ca. 54	10,4 4,0 1235	1015-1025 1070-1100 0,3-1,7						7,9-8,1 0=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

129	ill load stop	Rotational speed limitat	11381	uel delivery naracteristics	Starting f	uel delivery 5	<b>4a</b> ) Id!	e stop  Control rod
rev/min	cm /1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes	rev/min	cm //1000 strokes 7	rev/min 8	travel mm 9
975	77,0-78,0 (75,0-80,0)	1015-1025*	600	68,0-70,0 (6 <b>5</b> ,5-72,5)		128,0-138, (125,0-141, = 19,5 - 21,0 mm RW	0 - 0)	-

Checking values in brackets

\* 1 mm less control rod travel than cot 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. • 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fedérale d Allemagne par Robert Bosch GmbH.

## Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 4,2 h

2. Edition

En

PES 4 A 90 D 210 RS 2627 Komb.-Nr. O 400 864 053 RSV 350-1300 AOB 2145 L AOC 2145 L supersede6.82 company Ford-GB engine 254 NA 66 kW (90 PS)

At port closing the locating pin must engage in the slot of the pointer.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2.65-2.85) mm (from BDCbei 9,0-12,0 mm RW

Oil closing at pros		(4,00,00)							
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)			
rey/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm			
1	2	3	4	2	3	6			
1250	13,5+0,	7,4 - 7,5	0,3(0,45	)					
350	7,2-7,4	0,7 - 1,3	0,2(0,4)						
			1						
	1		i						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	rated spe	ed	1 🔾	que control
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rey/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	•	ca.37	350	6,8	-	-
10036	X =	3,5						min.19,0		
6 a.71	12,5 4,0 1705	1365-1375 1540-1570 0,3-1,7						7,2-7,4 630 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load stop  Test oil temp. 40°C (104°F)  rev/min cm³/1000 strokes  2		6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting Idle	fuel delivery	(5a) Idle stop		
		Note: changed to rev/min 3	rev/min cm³/1000 strokes		rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1250	73,5-74,5 (71,5-76,5)	1365-1375*	-	-	100	76,0-90,0 (73,0-93,0) = 19,0- 21,0 mm RW			
	Cold-start de	vice: unlate	hing	speed from st	artin	at 800-100	min,	1.	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(1)

WPP 001/4 FOR 5,9 d 5. Edition

En\_

PES 6 A 90 D 210 RS 2628 Komb.-Nr. 0 400 866 104 RSV 325-1200 AOB 2140 L AOC 2140 L supersed • 83 company Ford

engine

Dover 363 T/C

At port closing the locating pin must engage in the slot of the pointer.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,65-2,85) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175 350	<u> </u>	<u> </u>	0,3(0,45) 0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper Degree of deflection of control lever		Control rod travel mm	Intermediate Degree of deflection of control lever	rated spe	Control rod travel mm	Degree of deflection of control lever	rated spe rev/min 8	Control rod travel		que control Control rod travel mm
loose ca. 67	800 X = 10,5 4,0 1540	0,3 - 1,0 4,0 1240-1250 1375-1405 0,3 - 1,7	-	-	-	ca. 38	350	4,7 min.19,0 5,1-5,3 50= 2,0 max. 1,0	, ,	-

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	ad stop	6 Rotational- speed limitat		delivery racteristics	Starting Idle	fuel delivery	(5a) Idle stop		
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min cm³/1000 strokes 6 7		rev/min 8	Control rod travel mm 9	
LDA ∹<1175	0,7 bar 835-84,5 (81,5-86,5)	1240-1250 *	LDA 500	0 bar 49,0 - 51,0 47,0 - 53,0)	100	76,0 - 90,0 73,0-93,0) = 19,0-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

FOR 5,9 d

Test at n =

1175

rev/min decreasing pressure - in bar gauge pressure

2	-	

4113	
il-ISO	
Testo	

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2628 withAOB 2140 L	0,7	0	11,5 - 11,6 10,1 - 10,2
			11,1 - 11,2 10,3 - 10,5
		,	•

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 F1A 5,5 d
3. Edition

En

PES 6 A 90 D 410 RS 2633 Komb.-Nr. O 400 846 494 RQV 300-1500 AB 1165 L

supersed 6.83 company Fiat engine 8060.04.662 80.8 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	itroke (	2,15-2,35)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,1-9,2	5,3 - 5,4	0,3(0,45)			
300	8,2-8,4	0,9 - 1,5	0,2(0,4)			
	ł					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spi	eed		Lower rated	speed	•		Sliding s	leeve travel
Degree of deflection	rev/min Control	Control rod travel	<b>(1a)</b>	Degree of deflection		Control root	đ	Degree of deflection		Control travel	rod		0
	rod travel		(2a)	of control	rev/min	mm	<b>(4)</b>	of control lever	rev/min	mm	3	rev/min	mm
1	2	3		4	5	6	_	7	8	9		10	11
max.	1530	15,2-17	,8	-	-	-		ca. 17	100	min.	9,7	250	1,1-1,3
ca. 59	8.1	1540-15	50	Ì					300 600-6		8,4 2.0	670 1080	4,5-4,8 6,0-6,2
		1645-167 0 - 1,	75					330-430		max.		1500	8,4
					İ			<b>3</b> a					ļ <u>.</u>

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  rev/min   cm³/1000 strokes		limitation intermediate speed	(3)		idle switchir	ng point	Torque- travel	Control cod travel	
1	2	3	4	5	6	7	8	9	
1500	52,5-53,5 (50,5-55,5)	1540-1550*	500	38,5-40,5 (36,0-43,0)		68,0-78,0 (65,0-81,0) = 13,2-13,6 mm RW	1500 500 930 1130	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3	

Checking values in brackets

\* 1 mm less control rod travel than col 2

## Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 ETC 3,9 c

4. Edition

PES 4 A 90 D 320 RS 2634 RSV 300-1025 A 1 B 2153 R

A 1 0 2153 R

1 - 2 - 4 - 3 je  $90^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

company Eicher EDL 4-2

supersedes 9.83

Komb.-Nr. 0 400 824 233

65 kW (88 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC; RW=9.0 - 12.0 mm

		(2,13-2,33)				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1025	12,6+0,1	8,1 - 8,2	0,2(0,45			
300	10,9+0,2	4,4 - 4,9	0,2(0,4)			
	}				1	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper	rated speed		Intermediate	rated spe	ed	(4) Lo	wer	rated spe	ed	3 Tor	que controt
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	on ol		Control rod travel	rev/min	Control rod travel mm
1	2	3	4	5	6	7		8	9	10	11
1.0.0	800	0,3 - 1,0	-	-	-	ca. 1	16	300	10,5	1025	12,6+0,
100s <b>e</b>	x =	2,25						300	0,9-11,1	500 880	13,2+0, 12,9+0,
ca. 46	11.6 4.0 1260	1065-1075 1095-1125 0,3-1,0	_		_			400-4	60 =2,0		12,5

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load slop		6 Rotational- speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil tem rev/min 1	p 40°C (104°F) cm³/1000 strokes 2	Note changed to rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm 1/1000 strokes 7	rev/min 8	Control rod travel mm 9
1025	81,0-82,0 (79,0-84,0)	1065-1075*	750 500	83,5-86,5 (81,5-88,5) 77,0-79,0 (75,0-81,0)		19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

40

WPP 001/4 EIC 2,9 d 2. Edition

En

PES 3 A 80 D 320 RS 2650 Komb.-Nr. 0 400 873 031

RSV 300-1050 A1B 2171-1 R A1C 2171-1 R supersede 9.83

company Eicher
engine EDL 3-3 (-6)

1 - 3 - 2 je  $120^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

47.

2,2 - 2,3 (2,15-2,35)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm 1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
1050	8,7-8,8	4,7-4,8	0,2(0,35)			
300	7,9-8,1	2,4-3,0	0,2(0,3)			
	1					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	r rated speed		Interme	diate rate	d speed				rque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
<u> </u>	2	3	4	5	6	<u>  '</u>	0			
loose	800	0,3-1,0	-	-	-	ca.30	300	7,5	1050 500	8,7 <b>-</b> 8,8 9,7-9,8
	X =	6,0					100 300	min.19,5 7,9-8,1	825	9,2-9,4
ca.61	7,7 4,0 1290	1090-1100 1125-1155 0,3-1,7					430-490			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>1</b>	ull load stop emp 40°C (104 F)	6 Rotational- speed limitat	uel delivery naracteristics	Starting fuel delivery 5			48 Idle stop		
rev/min 1	cm 71000 strokes 2	changed to 1 rev/min	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	travel mm 9	
1050	47,0-48,0 (45,5-49,5)	1090-1100*	500	45,5-48,5 (44,0-50,0)	100	19,5-21,0 mm RW	<b>)</b> _	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.84



WPP 001/4 EIC 3.9 f

Eπ

PES 4 A 80 D 320 RS 2651 Komb.-Nr. O 400 874 235 RSV 300-1075 A1B 2175 R A 1 C 2175 R supersed%.83
company Eicher
engine EDL 4-1

3. Edition

1 - 2 - 4 - 3 je  $90^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1 -2.3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	cm³/	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075 300	10,5+0, 9,4-9,6	1 6,2-6,3 3,0-4,0	0,2 (0,3 0,2 (0,3			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	$1 \odot$	er rated spe		3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control tever	rev/min	Control rod travel mm	rev/min	travel mm	
1	000	0 2 4 0		13		ca. 2	300	9,0	1075	10,5+0,	
lose	008 X =	0,3-1,0 5,5	-	_	_	ca. E	100	min 19,5	500	11, +0,	
ca. 61	9.5 4,0 1330	1115-1125 11165-1195 0,3-1,7					300 450-	9,4-9,6 510 =2,0	850	10,9+0,	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	Sa Idle stop	
fest oil tem  ev/min I	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1075	62,0-63,0 (60,5-64,5)	1115-1125*	600	64,5-66,5 (63,0-68,0)	100	19,5-21,0 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

40

WPP 001/4 EIC 3,9 g 1 3. Edition

Εn

PES 6 A 80 D 320 RS 2652 Komb.-Nr. 0 400 876 317

RSV 300-1150 A 0 B 2001-2 R A 0 C 2001-2 R supersede 10.83
company Eicher
engine EDL 6-2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2, 10-2,20 (2 1-2 3)

mm (from BDC)

mm 2	cm/100 strokes 3	cm <sup>-/</sup> 100 strokes 4	travel mm 2	cm·/100 strokes	mm 6
12,0+0,1	7,8 - 7,9	0,25(0,4)			
8,3-8,5	2,0 - 3,0	0,2(0,35)			
	12,0+0,1	2 3 12,0+0,1 7,8 - 7,9	2 3 4 12,0+0,1 7,8 - 7,9 0,25(0,4)	2 3 4 2 12,0+0,1 7,8 - 7,9 0,25(0,4)	2 3 4 2 3 12,0+0,1 7,8 - 7,9 0,25(0,4)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Uppe	r rated speed	rev/min	Interme	ediate i	ated speed	4		rated speed	1 ( )	rque control
Degree of deflection	Control rod	Control rod travel		1		Control- lever		Control rod travel		Control rod travel
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11
	800	0,3-1,0	-	<u>. L'</u>	<del></del>	ca. 25	300	7,9	-	_
Toose	x =	4,75				ľ	100	min. 19,5		1
	11.0	4480 4000					300	8,3 - 8,5		
ca. 49 28	11,0 4,0 1430	1190-1200 1285-1315 0,3-1,7					450-5	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp_46°C (104_F)	Note	Note speed limitat			uel delivery 5	(Control rod		
rev/min	cm·/1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strok <del>e</del> s 5	rev/min 6	cm/1000 strokes 7	rev/min 8	travet mm 9	
1150	77,5-78,5 (76,0-80,0)	1190-1200*	600	71,0-73,0 (69,0-75,0)	100	103,0-113, 100,0-116 = 16,2 - 16,8 mm R	.0)	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Klz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany tmprimé en Republique Fédérale d'Allemêgne par Robert Bosch GmbH.

Testoitiso 4113

#### Test Specifications Fuel injection Pumps 2 and Governors

WPP 001/4 RAB 9,7 c

2. Edition

PES 6 A 95 D 410 RS 2653 Komb.-Nr. 0 400 846 495

RQ 200/1100 AB 1167 L

supersedes 9.83 company. RABA

D 2156 MT/MTK/ MTN 6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers A. Fuel Injection Pump Settings

mm (from BD&W=9,0-12,0 mm

Port closing at pres	troke	(1,65-1,85)	mm (from BDA)	N=9,0-12,	O mm	
Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,6+0,1	12,7-12,9	0,3 (0,6			
200	6,3-6,5	0,9-1,5	0,3 (0,5			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

PRG che	Control rod travel	Full-load s Setting po rev/min 3	•	-	cifications (4)	Idle spec Setting ; rev/min 7	coint Central red travel		cifications 5 Control rod travel mm	Torque o	Control rod (3)
600 VH=	19,2-20,6 max. 46°	600	19,9		1145-1160 1190-1220	1	6,4	200 320-3	min.7,6 6,3-6,5 60=2,0 max.1,0	600 810	12,6-12,7 13,7-13,8 13,4-13,6 12,8-13,1
	control travel		0,4	<u> </u>			1	145-11	160 min 1		1 mm less control

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor o Test oil ten	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	ery characteristics (3b)	Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes/ mm 7
LDA 1100	0,7 bar 126,5-128,5 (124,5-130,5)	•	LDA 700 LDA 500	0,7 bar 135,0-138,0 (133,0-140,0) 0 bar 82,5-84,5 (80,0-87,0)	100	156,5-166,5 153,5-169,5) =17,2-17,4 mm RW

Checking values in brackets

5.84

#### D. Adjustment Test for Manifold Pressure Compensator

RAB 9,7c

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

300			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2653 +RQAB 1167 L	0,70	0 0,24 0,12	13,7-13,8 10,4-10,5 12,8-12,9 11,2-11,4

Notes

(1) when n

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

D5.

En

40

WPP 001/4 MWM 3,1 b
2. Edition

En

PES 3 A 90 D 320/3 RS 2658 Komb.-Nr. 0 400 863 008

RSV 325-1500 A2B 505-2 R

supersede 9 • 83

company MWM
engine D 226 B-3

1 - 2 - 3 je  $120^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,95-3,05 Port closing at prestroke (2,90-3,10)

#8101-150 4113

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm /100 strokes	mm 6
1500	10,5+0,1	9,0-9,1	0,3(0,45)	2	3	
325	6,4-6,6	1,1-1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	ection travel travel ontrol mm mm rev/min			Control- lever deflection in degrees	Lower rev/min B	rated speed Control rod travel mm	Torque control Control rod travel rev/min mm			
loose	800 x =	0,3-1,0 5,5	•	<u>-</u>	•	ca.27	325 100	6,0 min.19,5	•	-
ca.66	9,5 4,0 1780	1540-1550 1615-1645 0,3-1,7					325 460 <b>-</b>	6,4-6,6 520=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Ft	ill-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting (	uel delivery 5	40 10	e stop
fest oil to rev/min 1	emp_40 °C (104°F) cm*/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rëv/min 6	cm 1/1000 strokes 7	rev/min 8	Control rod travel mm 9
1500	89,5-90,5 (87,5 <b>-</b> 92,5)	1540-1550*	-	-	l i	131,0-141, 128,0-144, = 19,5- 21,0 mm RW	<b>)</b> )	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.84

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 

4. 1930 by Robert Bosch GmbH. Posifach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MWM 4,1 b 2. Edition

PES 4 A 90 D 320/3 RS 2659

Komb.-Nr. 0 400 864 057

RSV 325-1500 A2B 505-2 R

D 266 B-4

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,95-3,05

Port closing at prestroke (2,90-3,10) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (forque control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm 1100 strokes	mm
1	2	3	4	2	3	6
1500	10,5+0,1	9,0-9,1	0,3 (0,45)			
325	6,4-6,6	1,1-1,7	0,2 (0,4			
			1			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed	l rev/min	Interme	diate rate	d speed	4	Lowe	r rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees ?	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca.27	325	6,0	-	-
1,0030	x =	5,5					100	min.19,5		
ca.66	9,5 4,0 1780	1540-1550 1590-1620 0,3-1,7					325 460-5	6,4-6,6 520 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Fu	ill-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting (	uel delivery 5	<b>4a</b> ) td	e stop
Test oil to rev/min 1	emp 40°C (104°F) cm1/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	Control root travel mm
1500	89,5-90,5 (87,5-92,5)	1540-1550*	-	-	100	131,0-141 (128,0-144 = 19,5- 21,0 mm RW	,0)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.84

Geschaftsbereich KH. Kundendienst. Klz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MWM 6.2 e

2. Edition

En

PES 6 A 90 D 320/3 RS 2660

RSV 325-1500 A 2 B 505 - 2 R

supersedes 4.83

company MWM

Komb.-Nr. 0 400 866 112

engine D 226-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,95-3,05

Port closing at prestroke (2,90-3,10)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	mm 2	cm /100 strokes	mm 6
1500	10.5+0.1	9.0 - 9.1	0,3 (0,5)			
325	6,4-6,6	1,1 - 1,7	0,25(0,45	i .		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed		Interme	diate rate	ed speed	(4)	Lower	rated speed	<b>3</b> to	rque control Control rod
Degree of deflection of control lever	Control rod travel mm	Control rod travet mm rev/min 3	4	5	6	Control- lever dellection in degrees 7.	rev/min 8	Control rod travel mm	rev/min	travel mm
loose	800	0,3-1,0	-	-	-	ca. 27	325	6,0	-	-
	x =	5,5					100	min.19,5		
ca. 66	9,5 4,0 1780	1540-1550 1615-1645 0,3-1,7					325 460 -	520=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ili-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting f	uel delivery 5	<b>49</b> id	e stop
Test oil fi rev/min	emp 40°C (104°F) cm <sup>-/</sup> /1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm <sup>-/</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*	-	-	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 FIA 5.5 f 3. Edition

PES 6 A 80 D 410 RS 2663

RQV 300-1350 AB 1175 L

8060.24.661 90.5 kW

Komb.-Nr. 0 400 846 499

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)RW = 9,0-12,0 mm

	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1350	12,3+0,1	6,7-6,8	0,25(0,35			
300	5,9-6,1	0,9-1,5	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod (ta	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		
lever 1	mm 2	rev/min (28	lever 4	rev/min 5	mm (4	) lever 7	rev/min 8	mm (3)	rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca.10	100	min.7,5	250	0,2-0,5
ca.59	11,3 4,0 1650	1390-1400 1520-1550 0 <b>-</b> 1.0				350-450	300 920	5,9-6,1 max.1,0	550 1000 1550	3,0-3,5 5,2-5,4 9 <b>,</b> 7
						39				i

Torque control travel a

#### C. Settings for Fuel Injection Pump with Fitted Governor

,	d stop np. 40°C (104°F) 2	intermediate speed	intermediate speed		switchir	ng point	Torque-control 5 travel Control ro- travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	_
1	2	3	4	5	6	7	8	9
1350	0,7 bar 66,5-67,5 (65,0-69,0)	1390-1400*	LDA 800 LDA 500	0,7 bar 59,0-61,0 (57,0-63,0) 0 bar 39,5-41,5 (37,5-43,5)	100	110,0-130,0 (107,0-133,0)	•	-

\* 1 mm less control rod travel than col. 2

5.84

#### D. Adjustment Test for Manifold Pressure Compensator

FIA 5,5 f

Test at n =

1350

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel difference
	Gauge pressure =	bar Gauge pressure = bar	mm (1)
PES6ARS2663	0,70		12,3 - 12,4
+ RQVAB1175L		0,27	12,0 - 12,1
		0,23	11,2 - 11,4
		0	10,8 - 10,9

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4

3. Edition

PE 6 A 100 C 320 RS 3008 EP/RSV 300-1150 A1B489DR

supersedes

PE 8 A 100

RS 3009 EP/RSV 300-1150 A1B489DR

MWM

engine

A1C489DR

D/TD 232 - 6

Instructions P. 3

D/TD 232 - 8

ROV 300/550-750 AB 660 R, 871 R
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2.0 + 0.1

mm (from BDC)

**Testoil-ISO 4113** 

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm\100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6 12	3,2 - 4,2 12,3 - 13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

EP/RSV .. 489DR

Uppe Degree of		Control rod	Interm	ediate rat	ed speed	(4)	Low	er rated speed  Control rod	3 To	orque control  Control rod
deflection of control lever	travel mm	mm rev/min	4	5	6	lever deflection in degrees 7	rev/min	travel mm	rev/min	mm 11
ca.66	1150 1200 1250	16,0 11,4 5,8	with spri		ıxiliar	ca.28	300 100	6,0 19 - 21		
29	1230 1280 1400	6,0-9,3 1,8-4,0 0,3-1		-			300 350 400 500	5,7-6,3 3,5-4,7 0,6-3,0 0 - 1	See	ote

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	Full-load stop St oil temp 40°C (104°F)  Rotational-speed limita			uel delivery naracteristics	Starting I	luel delivery 5	Idle stop	
rev/min	cm³/1000 strokes	changed to .) rev/min 3	rev/min	cm³/1000 strokes	rev/min	cm\$1000 strokes	rev/min 8	travel mm
see p	age 4 - 14							
					ŀ			

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.84

**B.** Governor Settings

RQV .. 660R, 871R\*\*

1 Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm	Intermedial Degree of deflection of control lever	rev/min	Control rod travel mm	Lower Degree of deflection of control lever	rev/min	Control rod travel mm	3 Too	Control rod travel mm
ca.66	750 770 790	14,8-17,8 9,0-14,0 3,5-10,5	ca.34	520 600 650 720	13,7-15,5 8,5-10,0 4,5-7,0		250 300 350	6,8-8,0 4,5-7,0 3,6-4,0		
(5)	800 840	0 - 8		<i>320</i>	U		550 630	1,8-4,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full la	Full load stop  6 Rotational speed limitat			(3a) Fuel delivery characteristics		fuel delivery	5a Idle stop		
Test oil tem rev/min 1	cm <sup>1</sup> /1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7		Control rod travel mm 9	
Instr	ctions P. 4-	4			100	15,7-16,3 mm RW			
			<b>6</b> a)		300	5,3-5,7 mm RW			

Checking values in brackets

• 1 mm less control rod travel than col 2

#### **B.** Governor Settings

Upper Degree of deflection of control lever	rated speed	Control rod travel mm	Intermediate Degree of deflection of control lever	-	ed Control rod travel mm	4 Lowe Degree of deflection of control lever	rated spe rev/min 8	Control rod travel	que control Control rod travel mm 11
								·	
(5)						i			

The sumbare denote the sequence of the tests

2) Full-load stop  6 Rotational-speed limitat		3a) Fu			fuel delivery	Sa Idle stop	
op 40°C (104°F)  cm³/1000 strokes	Note changed to rev/min 3	rev/min	cm³/1000 strokes	rev/mm	cm <sup>3</sup> /1000 strokes 7	t	Control rod travel mm 9
	np 40°C (104°F)	p 40°C (104°F)  cm³/1000 strokes  Note changed to rev/min	speed limitat changed to rev/min rev/min	speed limitat characteristics  Note changed to rev/min cm³/1000 strokes	speed limitat characteristics Idle  speed limitat characteristics Idle  characteristics characteristics  rev/min rev/min cm³/1000 strokes rev/min  cm³/1000 strokes rev/min	speed limitat characteristics lidle  Note changed to rev/min cm³/1000 strokes rev/min cm³/1000 strokes  The speed limitat characteristics lidle characteri	speed limitat characteristics lidle  Note changed to rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min 6 7

\*\* Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at  $\underline{MWM}$  1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

- (2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2
- (3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5
- (6) Is adjusted according to nameplate n = (speed 1 +
  20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

#### according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 8 A:

Testoil-ISO 4113

engine per Full-load of Control-ro Test oil te	telivery	Rotational-speed limitation	Fuel deli	very characteristics	Starting fuel delivery Idle switching point	intermediate rotational speed Torque-control
rev/min	cm <sup>9</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min cm³/1000 strokes	travel rev/min   mm
1	2	3	4	5	8 7	8
F 165	PS / 2500 min	-1	•			
1250	81,0-83,0	1270	750	82,5-85,5		
B'162	PS / 2500 min	-1				
1250	81,0-83,0	1270	750	82,5-85,5		
B 162	PS / 2500 min	-1				
1250	81,0-83,0	1270				
F 160	PS / 2300 min	-1				<del> </del>
1150	80,0-82,0	1170	750	82,5-85,5	•	
B'155	PS / 2300 min	-1				
1150	80,0-82,0	1170	750	82,5-85,5		
B 155	PS / 2300 min	· 1	<del></del>	<del>-</del>		
1150	80,0-82,0	1170				
A 141	PS / 2300 min	-1		•		
1185	76,0-78,0	1200			•	
B'144	PS / 2100 min	-1	·			
1050	77,0-79,0	1060	750	82,5-85,5		
B 144	PS / 2100 min	-1	<del></del>			
1050	77,0-79,0	1060				
A 131	PS / 2100 min	-1				
1080	73,0-75,0	1090				
F 144	PS / 2000 min	-1	<del></del>		· · · · · · · · · · · · · · · · · · ·	
1000	77,0-79,0	1010	750	82,5-85,5	· · · · · · · · · · · · · · · · · · ·	
B'138	PS / 2000 min	-1		<b>—</b>		
1000	77,0-79,0	1010	750	82,5-85,5		

①

engine pe Full-load ( Control-ro Test oil te	delivery	Rotational-speed limitation	Fuel deli	very characteristics	Idle	fuel delivery	intermed rotations Torque- travel	l speed
rev/min	cm <sup>9</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/man	mm
<u>                                     </u>	2	3	14	5	6	7	В	<b>  </b>
B 138	PS / 2000 min	<u>-1</u>						
1000	77,0-79,0	1010						
A 126	PS / 2000 min	·1						
1030	73,0-75,0	1040						
B 127								
900	78,0-80,0	910						
A' 115	PS / 1800 min-	<u>·1</u>						
900	78,0-80,0	910						
A 115	PS / 1800 min-	·1						
930	74,0-76,0	940						
B 108	PS / 1500 min <sup>-</sup>	·1						
750	80,0-82,0	760						·
A' 98	PS / 1500 min-	-1		·				
750	80,0-82,0	760						
A 98	PS / 1500 min	-1						
775	76,0-78,0	785				·	·.	
B 162	PS / 2300 min-	.1						
1150 Specia	83,0-85,0 1 output	1170						
D 143	PS / 1800 min-	1						
900 Standb	89,0-91,0 y power output	910						
C 130	PS / 1800 min <sup>-</sup>	1						
900 S <b>tand</b> b	89,0-91,0 y power output	910						

0

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation			Starting Idle switchir	fuel delivery ig point	Intermediate rotational speed Torque-control travel	
ev/min	cm <sup>3</sup> 1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes		լուո
1 :	2	3	4	5	6	7	8	

D 120 PS / 1500 min<sup>-1</sup>
750 90,0-92,0 760
Standby power output

C 109 PS / 1500 min-1 750 90,0-92,0 Standby power output

760

#### D 232 V 8 - Power output at speed

engine p Full-load Control-re Test oil te	delivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	fuel delivery ng point	intermed rotationa Torque- travel	i speed
rev/min	cm <sup>9</sup> 1000 strokes	rev/min	rev/min	cm <sup>9</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes		mm
F 220			+					
1250	81,0-83,0	1270	750	82,5-85,5				
B 216	PS / 2500 min	-1						
1250	81,0-83,0	1270	750	82,5-85,5				
B 216	PS / 2500 min	· <u>1</u>						
1250	81,0-83,0	1270						
F 213	PS / 2300 min	·1						
1150	80,0-82,0	1170	750	82,5-85,5				
B'206	PS / 2300 min	-1						
1150	80,0-82,0	1170	750	82,5-85,5				
B 206	PS / 2300 min	-1						
1150	80,0-82,0	1170						
A 188	PS / 2300 min	.1						
1185	76,0-78,0	1200						
B'192	PS / 2100 min	1						
1050	77,0-79,0	1060	750	82,5-85,5				
B 192	PS / 2100 min	·1						
1050	77,0-79,0	1060					. •	
A 175	PS / 2100 min	· <u>1</u>			<del></del>			
1080	73,0-75,0	1090						
F 192	PS / 2000 min	· <u>1</u>	· ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
1030	77,0-79,0	1040	750	82,5-85,5				
B' 184	PS / 2000 min	·1		· · · · · · · · · · · · · · · · · · ·				
1000	77,0-79,0	1010	750	82,5-85,5				

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-los Contro	power ad delivery i-rod stop i temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	Idle	tuel delivery	intermed rotations Torque- travel	l speed
rev/mii		rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	ļ. • · · ·	rev/min	l mm
1	2	3	14-	5	6	7	8	<del>                                     </del>
B 18	4 PS / 2000 min <sup>-</sup>	·1						
1000	77,0-79,0	1010	•					
A 16	8 PS / 2000 min	-1						
1000	73,0-75,0	1010						
B 16	9 PS / 1800 min	·1				· · · · · · · · · · · · · · · · · · ·		
930	78,0-80,0	940						
A'15	4 PS / 1800 min	·1						
900	78,0-80,0	910						
A 15	4 PS / 1800 min	1		·				
900	74,0-76,0	910						
B 14	4 PS / 1500 min-	1						<del> </del>
775	80,0-82,0	785						
A' 13	D PS / 1500 min-	1						
750	80,0-82,0	760						
A 13	O PS / 1500 min-	1	· · · · · · · · · · · · · · · · · · ·					······································
750	76,0-78,0	760						
B 216	5 PS / 2300 min-	1						
1150 Spec	83,0-85,0 ial output	1170						
D 190	) PS / 1800 min <sup>-</sup>	1		· · · · · · · · · · · · · · · · · · ·			<del></del>	
900 Stand	89,0-91,0 lby power output	910						
C 173	3 PS / 1800 min-	1	<del>_</del>					•
900 Stand	89,0-91,0 lby power output	910						

218

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full-toad di Control-rod Test oil ten	elivery	Rotational-speed limitation	Fuel deln	very characteristics	Starting Idle switchir	fuel delivery	Intermed rotationa Torque-	speed
rev/min	cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	Li

D 160 PS / 1500 min-1 750 90,0-92,0 760 Standby power output

C 145 PS / 1500 min<sup>-1</sup>

750 90,0-92,0 760

Standby power output

①

engine p Full-load Control-r Test oil to	delivery	Rotational-speed limitation	Fuel deln	rery characteristics	Idle	fuel delivery ng point	Intermed rotationa Torque- travel	l speed
rev/min	cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	l ww
1	2	3	4	5	6	7	8	<del> </del>
F 210	PS / 2300 min	- <u>1</u>						
1150	105,0-107	,0 1170	800	104,5-107,5				
B'207	PS / 2300 min	-1						
1150	105,0-107	,0 1170	800	104,5-107,5				
B 207								
1150	105,0-107,	,0 1170						···
A 188	PS / 2300 min	<u>-1</u>						
1185	101,0-103,	,0 1200				·		·
B' 192	PS / 2100 min	<u>·1</u>						
1050	103,0-105,	,0 1060	800	104,5-107,5				
B 192	PS / 2100 min	·1						
1050	103,0-105,	0 1060						
A 174	PS / 2100 min	·1						
1080	99,0-101,0	1090						
F 192	PS / 2000 min	1						
1000	102,0-104,	0 1010	800	104,5-107,5				· .
B'184	PS / 2000 min	1						
1000	102,0-104,	0 1010	800	104,5-107,5				•
B 184	PS / 2000 min-	1						······································
1000	102,0-104,	0 1010						
A 167	PS / 2000 min	1						,
1030	98,0-100,0	1040				**		. '
3 168	PS / 1800 min-	1					<del></del>	·····
900	101,0-103,	0 910						

## Testoil-ISO 4113

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational-speed limitation	Fuel deli	very characteristics	idle	fuel delivery	Intermediate rotational speed Torque-control travel
rev/min cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min mm
1 2	3	4	5	6	7	8
A'153 PS / 1800 mir	<u>1-1</u>					
900 101,0-103	3,0 910					
A 153 PS / 1800 mir	1-1			<u> </u>		
930 97,0- 99,	,0 940					
B 142 PS / 1500 mir	<u>-1</u>					
750 100,0-102	2,0 760					
A'129 PS / 1500 mir	<u>ı-1</u>			7 77 11		
750 100,0-102	760					
A 129 PS / 1500 mir	-1	<del></del>				
775 96,0- 98,	0 785					

#### C. Settings for Fuel Injection Pump with Fitted Governor

TD 232 V 8 Power output at speed

engine po Full-load o Control-ro Test oil te	telivery	Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switching	fuel delivery ng point	Intermed rotationa Torque- travel	l speed
rev/min	cm <sup>2</sup> 71000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes		mm
F 292			1		1			,
1250	102,0-104	<del></del>	800	100,5-103,5				
B'292	PS / 2500 min	-1						
1250	102,0-104	,0 1270	800	100,5-103,5	,			
B 292	PS / 2500 min	-1						
1250	102,0-104	,0 1270						
F 280	PS / 2300 min	-1			_			
1150	100,0-102	,0 1170	800	100,5-103,5	•	D		
B'275	PS / 2300 min	-1						
1150	100,0-102	,0 1170	800	100,5-103,5	)			
B 275	PS / 2300 min	-1						
1150	100,0-102	,0 1170						
A 250	PS / 2300 min	-1						
1185	96,0 - 98	,0 1200						
B'255	PS / 2100 min	-1						
1050	99,0 -101	,0 1060	800	100,5-103,5	•			
B 255	PS / 2100 min	-1	***************************************					•
1050	99,0 -101	,0 1060			•,		•	
A 232	PS / 2100 min	-1		*				
1080	95,0 - 97	,0 1060		· .			. •	
F 256	PS / 2000 min	_						
1000	99,0 -101	,0 1010	800	100,5-103,5		· · · · · · · · · · · · · · · · · · ·	*	
B'245	PS / 2000 min	-1						: :
1000	99,0 -101	,0 1010	800	100,5-103,5	,			

engine power Full-load delivery Control-rod stop Test oil temp 40°C (10		Rotational-speed limitation	Fuel deliv	very characteristics	Idle	fuel delivery	Intermediate rotational speed Torque-control travel	
rev/min cm <sup>2</sup> 1000	strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min   mm	
1 2		3	4	5	6	7	8	
3 245 PS / 20	00 min-	1	•					
1000 99,	0 -101,	0 1010					·	Г
A 222 PS / 20	00 min-	1						7
1030 95,	0 - 97,	0 1040						4
3 224 PS / 18	00 min-	1		<del></del>				0777
	0 -101,	_						
	-					· · · · · · · · · · · · · · · · · · ·		ioto
1'203 PS / 18		_					•	15
900 99,	0 -101,	0 910						18
203 PS / 18	00 min-	1		·····				76
	0 - 97,	<del>-</del>				e e e e e e e e e e e e e e e e e e e		
3 189 PS / 15	00	1			<del></del>	<del></del>	<del></del>	
	0 -100,	<del>-</del>						
	-100,						· · · · · · · · · · · · · · · · · · ·	
1172 PS / 15	00 min-	1_						
750 98,	0 -100,0	760						
172 PS / 15	OO min-	 1	<del></del>					
	0 - 96,	_						
				<del></del>		<del></del>		
250 PS / 18								
900 111 Standby power	,0-113,0 output	910						
						<del></del>		
227 PS / 18		<del></del>						
900 111 Standby power	,0-113,0	910			•			
				<del></del>		<del> </del>		
210 PS / 15								
	,0-113,0	760						
tandby power	output						er een dy ty	

# Testoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

	engine po Full-load di Control-roo Test oil ten	elivery	Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
1 2 3 4 5 6 7	rev/min	cm <sup>2</sup> 71000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes		mm

C 191 PS / 1500 min-1

750

111,0-113,0

760

4

WPP 001/4 EIC 3,9 h
2. Edition

En

PES 6 A 90 D 320 RS 2674 Komb.-Nr. 0 400 876 318

RSV 300-1150 A0B 2001-2 R A0C 2001-2 R supersedes, 83 company Eicher EDL 6-4/5/6 engine 109 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-150 4113

2,2 - 2,3 (2,15-2,35)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm //100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1125	12,0+0,1	7,8-7,9	0,25(0,5)			
300	8,3-8,5	1,3-2,3	0,3(0,45)		·	
		ŀ				
		1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Uppe	r rated speed	J rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 17	300	7,9	-	_
10056	X =	3,0					100 300	min.19,5 8,3-8,5		
ca.42	11,0 4,0 1375	1165-1175 1205-1235 0,3-1,7					390-450			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-toad stop emp_40°C (104°F)	Rotational- speed limitat	speed limital characteristics			luel delivery 5	da Idle stop	
rev/min 1	cm //1000 strokes	changed to : rev/min 3	rev/min	cm1/1000 strokes	rev/min 6	cm*/1000 strokes 7	rev/min 8	travel mm 9
1125	77,5-78,5 (75,5-80,5)	1165-1175*	-	-	100	127,0-13 (124,0-140 - 19,5 - 21,0 mm	,0- ,0)	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.84



4

WPP 001/4 VAL 6,6 a

1. Edition

Er

PES 6 A 95 D 320 RS 2684

RSV 325-1050 AOC 2178-2 R

Komb.-Nr. 0 400 876 321

supersedes =

company Valmet 611 D

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,5-2,6 (2,45-2,65)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>-/</sup> /100 strokes	Difference cm <sup>-/</sup> 100 strokes	Control rod travel mm	Fuel delivery	Spring pre-tensioning (torque-control valve) mm
1050	7,9-8,0	3 6,5-6,7	0,35(0,6	2	3	6
325	4,6-4,8	1,2-1,6	0,35(0,5			
						N. 1

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

11 1 /	rated speed Control rod travel mm		tntermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm 9	9	que control Control rod travel mm
loose	800 x =	0,3-1,7 5,0	-	-	-	ca. 24	100	4.2 min.19,5	1050 500	7,9-8,0 8,7-8,8
ca. 41	6,9 4,0 1295	1090-1100 1140-1170 0,3-1,4					325 410-4	4,6-4,8 70=2,0	840	8,2-8,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(A)	ill-load stop	Rotational- speed limitat	11.361	uel delivery paracteristics	Starting I	uel delivery	<b>4a</b> ) Idi	e stop LControl rod
rev/min	emp 40°C (104°F) cm'/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm v1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min	travel mm 9
1050	65,0-67,0 (63,0-69,0)	1090-1100*	500	57,0-60,0 (54,5-62,5)	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.84

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d Allemagne par Robert Bosch GmbH.

40

WPP 001/4 CAS 8,3 a 1

1. Edition

En

PES 6 A 100 D 420 LS 3024

RSV 375-1100 A 2 B 763 DR

supersedes

company Case

engine

A-504 BDT

Komb.-Nr. 0 401 276 036

Values apply to fuel-injection test tubing

9 681 230 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1

mm (from BDC)

(	1,	95	-2	,1	5)
7					

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm 100 strokes	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13.0	15.8-16.0	0,3 (0,6)			
375	6,0	1,6-2,2	0,35(0,55)			
				:		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min   Control rod   travel   mm rev/min   3	Interme	diate rated	speed	Control- lever deflection in degrees 7	rev/min	rated speed  Control rod  travel  mm  9	3 To	rque control '  Control rod  travel  mm
ca. 43	1140 1150 1200	10,6-11,0 9,6-10,2 4,6- 6,0	wit	hout a	uxili	ca.22 ary	375 150	6,0 19-21	1000 700	0 0-0,35
29	1225 1300	2,2-4,0 0,2-1,2	spr	ing			300 375 450 600	9,5-11,3 6,0 2,6-4,1 0-1,0	500	0-0,35

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b F	ull-load stop	6 Rotational- speed limitat	39 Ft	uel delivery haracteristics	Starting f	uel delivery 5	<b>4a</b> ) Idi	4a Idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm\$/1000 strokes 2	Note. changed to) rev/min 3	rev/min	cm³/1000 strokes	rev/min	cm#1000 strokes 7	fev/min 8	Control red travel mm 9	
1100	156,5-161,5 (155,0-163,0)	1140-1150*	700 600	159,5-165,5 (158,0-167,0) max. 63	100 375 High 1215	135,0-145,0 16,0-22,0 idle speed 26,0-32,0		6,0	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 HAN 10.8 f

7. Edition

PE 6 A 100 D 320 RS 3030 Komb.-Nr. 0 401 076 006

EP/RSV 350-1100 A 8 B 1119 DRupersede 12.83 A 8 C 1119DR<sub>company</sub> MF-Hanomag

engine D 963 A 2

\*\* Cold-start test on EP/RSV governor according to Service Information VDT-I-420/114.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(1,75-1,95)Port closing at prestroke

mm (from 800W=9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm //100 strokes	cm <sup>-/</sup> 100 strokes	mm 2	cm <sup>1</sup> /100 strokes	mm 6
1100	11,5+0,1	15,0-15,2	0,3 (0,6)		3	
350	6,8-7,0	1,9-2,5	0,3 (0,5)			
					rence between = 5,5-6,5° cam	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	r rated speed	rev/min  Control rod	Interme	diate rated	speed	Lower rated speed			I (	Torque control		
deflection of control	travel mm	travel mm rev/min				Control- lever deflection	rev/min	travel mm	rev/min	travel mm		
lever	2	3	4	5	6	in degrees 7	8	9	10	11		
loose	800	0,3-1,0	•	-	-	ca. 24	350	5,5	-	-		
	x =	5,5					100	min.19,0				
ca.56	10,5 4,0 1355	1140-1150 1210-1240 0,3-1,7					350 435-495 600	5,9-6,1 = 2,0 0-1,0				

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> <sup>fu</sup>	III foad stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting t	iuel delivery 5	4a Idle stop	
Test oil to revimin	emp 40°C (104°F)     cm//1000 strokes   2	Note changed to ) rev/min 3	revimun	cm <sup>1</sup> /1000 strokes	rev/min	cm³/1000 strokes 7	rev/min	Control rod travel mm
1100	150,0-152,0 (148,0-154,0)	1140-1150*	-	-	100	19,0-21,0 mm RW **	·	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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WPP 001/4 RAB 10,8 a

4 . Edition

RSV 475-950 A 1 B 2121 L PES 6 A 100 D 410 RS 3039

A 1 C 2121 L

supersedes. 84 company RABA

engine 184 kW (250 PS)

Testoil-ISO 4113 Komb.-Nr. 0 401 276 051

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 4 (1,55-1,75)

mm (from BDC)

Rotational speed rev/min 1		Fuel delivery  cm <sup>3</sup> /100 strokes 3	cm³/	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	13,6+0,1	15,2-15,4	0,3 (0,6			
475	5,9-6,1	1,2-1,6	0,3 (0,5	)		
			<u> </u>	<u>                                     </u>		<u> </u>

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed	J	Intermediate	rated spe	eed	4 Lowe	r rated spe	ed	(3) Tor	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm 11
1 <sub>0</sub> ose	800 x	0,3-1,0 3,75	-	-	-	ca.27		5,5 min.19,5 5,9-6,1	950 500 840	13,6+0, 15,5+0, 14,9+0,
<b>§</b> 49	12,6 4,0 1195	990-1000 1030-1060 0,3-1,7						630 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-1	oad stop	6 Rotational- speed limitat. (3a) Fuel delivery characteristics		Starting Idle	fuel delivery	(5a) idle stop		
Test oil ten rev/min 1	np. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min	Control rod travel mm
LDA 950	0,7 bar 15 2,0-154,0 (15 0,0-156,0)	990-1000*	LDA 750 LDA 500	0,7 bar 189,0-184,0 (178,0-186,0) 0 bar min, 149,0 (min, 151,0		-	•	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 3039	0,7		15,5 - 15,6
withA 1 B 2121L		0	13,5 - 13,6
		0,55	15,0 - 15,1
		0,42	14,1 - 14,3

Notes:

Testoil-ISO 4113

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 VOL 10,0 1 2. Edition

En

PE 6 P 120 A 320 RS 3061 RSV 200-900 P4/421 R Komb.-Nr. 0 401 876 716 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company Volvo
TAMD 120 B
250 kW (340 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2

2,6-2,7 (2,55-2,75)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm*/100 strokes	100 strokes	mm 2	cm <sup>1</sup> /100 strokes	mm 6
700	11,8+0,1	20,5-20,7	0,6 (0,9)			
250	5,0-5,2	0,9-1,3	0,3 (0,6)			
			İ			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	er rated speed		Interme	ediate rate	ed speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever dellection in degrees	rev/min	Control rod travel mm	revimin	Control rod travel mm
<u> </u>	2	3	14	5	6	ļ <u></u>		9		<u> </u>
loose	800	0,3-1,7	-	•	-	ca.28	250	4,6	-	-
10030	x =	5,5					100 250	min.20,0 5,0-5,2		
ca.60	10,8 4,0 1150	940-950 995-1025 0,3-1,7					315-37			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

9	ull-load stop emp 40°C (104°F)	6 Rotational- speed limitat		nel delivery aracteristics	Starting (	luel delivery 5	<b>43</b> Idi	e stop  Control rod
rev/min	cm /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm/1000 strokes 7	rev/min 8	travel mm 9
700	205,0-207,0 (202,0-210,0)	940-950*	-	- 73	100	390,0-440, = 20,0- 21,0 mm R		5,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.84

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Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

#### **Test Specifications Fuel Injection Pumps** and Governors

WPP 0C1/4 MB 2,2 d 1. Edition

En

PES 4 M 55 C 320 RS 152-1

supersedes

RSF 375/2250 M 56

OM 601 54 kW

Daimler-Benz

Komb.-Nr. 0 400 074 968/Sales model

0 400 074 962 engine U.S.A

1 - 3 - 4 - 20 - 90 - 180 - 270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instructions on the reverse.

Port closing at prestroke

mm (from BDC)

Control rod travel

2,00-2,10 (1.95-2.15)

RW = 20.0 - 22.0 mm

		(1,33.6,13)	1,114	,_	,	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,1+0,1	3,4-3,5	0,25(0,3)			
375 1800 2200	6,4-6,6	0,5-0,6	0,10(0,15) 0,25(0,3) 0,25(0,3)			
		:				

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated speed				Variations in control rod travel			
deflection	Control rod travel	Rotational speed	Degree of deflection of control		Control rod travel	Rotational speed		Rotational speed	Control rod travel	
of control lever	mm	rev/min	lever		mm	rev/min		rev/min	mm	
1	2	3	4		5	6	7	8	9	
	min.12,5 6,4-6,6 ** - 2,5	250 375 400 630-730	50°	78991	8,8- 9 - 0-1,0	,5 2200 ,2 2500 2950	(2) (3) (4)	1800 1000 Switching p	min.20,6 12,7-12,9 13,1-13,2	

#### C. Settings for Fuel Injection Pump with Governor Mounted

Test oil temp 40°C (104°F)  rev/min   cm³/1000 strokes   rev/min   2     cm³/1000 strokes	ıll-load delivery	y <u>19</u>	Full-load speed (8a) regulation	Variations delivery	in fuel 17	Starting f	uel delivery	
2200 36,0-38,0 2500* 1800 36,0-37,5 100 min.55 6,0 (35,0-39,0) 8,8-9,2 (38,0-38,5) 375 5,0-6,0 1,0 (4,5-9,0) 1,5	est oil temp 40°	°C (104°F)			1 (8)			Difference
(35,0-39,0) 8,8-9,2 (38,0-38,5) 375 5,0-6,0 1,0 (4,5-9,0) 1,5	v/min cm³/	1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
(35,0-39,0) 8,8-9,2 (38,0-38,5) 375 5,0-6,0 1,0 (4,5-9,0) 1,5	2		3	4	5	6	7	8
1000 34.0-35.0 0000 04.0.05.0 0.5.5				1800			5,0-6,0	1,0 1,5
$(33,0-36,0) \begin{array}{ c c c c c c c c c c c c c c c c c c c$			·	1000	34,0-35,0 (33,0-36,0)	2500	21,0-25,0 (20,0-26,0)	2,5 see (15) 3,0 Point 8 a (16)

Checking values in brackets

ca. 3,4

less control rod travel than in Column 2 4.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. c. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

- 1. \*\* Position the idle-speed auxiliary spring at n = 400 min<sup>-1</sup> so that the control-rod travel is forced further by 0.1 0.2 mm.
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 46°. No change in control-rod travel after switching point up to 550 min-1.
  Control-lever position 30°. Rotational-speed range 350 min-1 450 min-1.
- 4. Testing the pneumatic shutoff box

  Control lever against idle stop.

  At n = 375 min<sup>-1</sup> and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.
- 5. overlow valve 1 469 990 351
- 6 \*FB (start of delivery) difference between max. and min. value: 1° camshaft
- 7 Set the idle at the PLA aneroid box. To do so, release the lock nut.
- 8 Set the pneumatic idle increase (PLA):

  At 0.4 bar overpressure, n = 425 min<sup>-1</sup>, RW (control-rack travel)
  = 8.0-9.6 mm (11-19 cm<sup>3</sup>/1000 strokes).
- 9 Check for leaks (vacuum test) at the PLA aneroid box

  Apply 0.8 bar to the PLA aneroid box through a 3-way cock
  and a pressure gauge. Using the 3-way cock, separate the
  vacuum supply from the PLA and the pressure gauge. Permissible
  pressure drop = 30 mbar in 15s.
- 10 FBG (start of delivery sensor) adjustment

  Adjustment and locking of FBG as per the FB average value of all cylinders, 19.5 ± 0.2 (0.3) °camshaft after cylinder 1.

(5)

#### Test Specifications Fuel Injection Pumps and Governors

4

WPP 001/4 VOB 6,0 c 5. Edition

En

estoil-ISO 4113

PES 6 MW 100/320 RS 5
RWV 300...1250 MW 17
0 403 246 005
1 - 5 - 3 - 6 - 2 - 4 = 0 - 60-120-180-240-300 0,5(0,75)

company Volvo engine TD 60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,50-2,60 (2,45-2,65)

mm (from BDC)

9, 0-12, 6 Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
ev/min	mm	cm <sup>1</sup> /100 strokes	cm 1/100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
t	2	3	4	2	3	6
1000	9,4-9,5	7,5-7,7	0,35(0,6)			_
300	5,7-5,9	1,5 - 1,9	0,35(0,55	<b>)</b>		
500.			0,5(0,7)			

Set uniform delivery according to the values in [\_\_\_\_\_\_]

Checking values in brackets

#### **B.** Governor Settings

Lower rate	d speed			Upper rated s	peed		Variations in control rod travel			
Degree of deflection			Rotational speed	Degree of deflection	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
of control tever	т	١,	rev/min	of control lever	mm	rev/min	1	rev/min	mm	
1 ,	2		3	4	5	6	7	8	9	
20	① ② 5	8,5 ,7-5,9	100-200 300		9,3-9,5	1300-1310	(12)	100 1000	20,5-21,5 9,4-9,5	
(	<u> </u>	**	325 -	· ·	4.0 0 -1,0	1360-1400 1460	(14)	800 550 Switching p	9,5- 9,7 9,0- 9,2	
•	(S)	2,0	420-470	40 +5	9 -	-	6	•	30(80-250)	

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load de	elivery (19)	Full-load speed 8a regulation	Variations delivery	in fuel 17	Starting fo	uel delivery	,	•
Test oil ten	np. 40°C (104°F)			18			Difference	
rev/min	cm 1/1000 strokes	rev/min	rev/min	cm 1/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm 1/1000 stro	kes
1	2	3	4	5	6	7	8	
1000	75,0 <b>-</b> 77,0 (73,0 <b>-</b> 79,0)	1300-1310* (1295-1315)	550	53,3 - 57,3 (51,3 - 59,3)				(124)
	(13,0213,0)	(1293-1313)		(31,70 37,70)	300	15,8 - 19,8	3,5	(15)
				*				(16)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

BOSCH

5,84

#### 1. Idle stage

4.25 ± 0.1 mm

- 2. ++ At this engine speed the auxiliary idle spring must just touch. Idle delivery must not be changed.
- 3. Whilst stationary control-rod travel must be at least 21 mm. (Check after adjusting the locking speed).

WPP 001/4 MB 3,0 t 2 1. Edition

En

PES 5 MW 55/320 RS 16-1 RW 375/2200 MW 28-3 0 403 245 025

companyDaimler-Benz engine OH 617 A-USA 92 kW (125=PS)

Note: Before starting testing, observe the important instructions on the reverse.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Start-of-delivery adjustment and blocking

19.5° after start-of-delivery cylinder 1.

Port closing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

19,5-22,5<sup>Control rod travel</sup>

ohne ALDA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm 1/100 strokes	cm³/100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,	5,15-5,25	0,25 (0,3)			
375	5,2-5,	3 0,6 -0,7	0,1 (0,15	)		
1600			0,25 (0,3)			ł
2180			0,25 (0,3)	<u> </u>		
	!					

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

#### ohne ALDA

Lower rated sp	eed		Upper rated spo	eed		Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm	
1	2	3	4	5	6	7	8	9	
	min.11	100	69 🕡	12,1-12	,3 2180	(12)	100	20,5-21,5	
	max.11 5,2-5,3	320 375	▮	11,2	2300-2320	03	1600	13.1-13.3	
9	**	3/3	9	4,0	2620-2720	(14)	1000	13,1-13,3 13,5-13,6	
	-	-	9	0,0-1,0	2950	െ	Switching po	(240-330)	
							-00	(2.5 300)	

#### C. Settings for Fuel Injection Pump with Governor Mounted

ivery (19)	Full-load speed (8a) regulation	Variations in fuel delivery 17		Starting fuel delivery		
o 40°C (104°F)			18		1	Difference
cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
2	3	4	5	6	7	8
2180 50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0	6.0
	(3300 3000)			375	6,0-7,0	1,0
		1000	51,5-52,5		(5,5-9-5)	(1,5) (5)
			(50,5-53,5)	2550		2,5
					(23,0-31,0)	(3,0)
-	50,0-52,0	2 40°C (104°F) cm³/1000 strokes rev/min 3 50,0-52,0 2300-2320*	140°C (104°F)  1000 strokes 2	180 cm³/1000 strokes rev/min rev/min 4 cm³/1000 strokes 5 cm³/1000 str	140°C (104°F)  18  18  18  18  18  18  18  1000 strokes  1	140°C (104°F)  180  180  180  180  180  180  180  18

Checking values in brackets

4.84

ohne ALDA

<sup>\* 1</sup> mm less control rod travel than in Column 2

#### Testing with ALDA

Point	min <sup>-1</sup>	cm <sup>3</sup> /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar( 800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

#### 1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of  $69^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of  $49^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8,8 - 9,5 must be reached.

## 2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at  $n=800 \, \text{min}^{-1}$ . Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

### 3. Adjusting the idle-speed auxiliary spring (70)

\*\* Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min<sup>-1</sup>.

## 4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at  $n=375~\text{min}^{-1}$ . Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at  $n=1000^{-1}$ .

- 5. \*\*\* Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.
- 6. Pin projection =  $16.65 \pm 0.1 \text{ mm}$
- 7. Shutoff check: Operate the fuel-injection pump at n = 200 min<sup>-1</sup>. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.
- 8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at  $n=375\,\mathrm{min}^{-1}$ . At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.
- 9. Control-lever range idle full load =  $38 42^{\circ}$ .

10. Testing and setting of control-rod travel sensor
with evaluation circuit
K5/EES - RWG.00 RBN - 40

#### Receiving inspection:

Set control lever so that a voltage of 2.1  $\pm$  0.005 V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached. Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 + 0.08 V.

#### Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/ 1000 lifts with control lever. Move control-rod travel sensor until  $U = 2.1 \pm 0.005$  V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of  $3.2 \pm 0.04$  V must be reached.

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 13,8 a 7 2. Edition

PE 6 P 120 A 720 RS 167

RQV 225-1100 PA 337 R

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes: 83 company 221 A/8210.02.022 engine: 184 kW Komb.-Nr. 0 401 846 361

0 401 846 454

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speud	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm³/100 strokes	mm ·
1300	10,7+0,1	16,9-17,1	0,5(0,9)	2	3	- 6
					ļ	_
225	7,5-7,7	1,7-2,3	0,8(1,2)	ļ		-
					-	

Adjust the fuel delivery from each outlet according to the values in [

**B. Governor Settings** 

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod ta travet mm rev/min 2a	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	(1) mm 11
max.	1100	15,2-17,8	-	-	-	ca.13	100	min.9,1		0,7-0,8
ca.60	9,7 4,0 1350	1140-1150 1200-1230 0-1,0				295-410	225	7,5-7,7		2,7-3,0 4,6-4,9 8,0
						3				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		fimitation intermediate speed	Fuel delin high idle s	rery characteristics 5e speed 50	Starting Idle switchin	. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	169,0-171,0 (166,0-174,0)	1140-1150*	•	-	-	<b>-</b>	•	,

Checking values in brackets

1 mm less control rod travel than coi. 2

5.84

E16

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 BOS 12.3 d 3. Edition

- [	Εį	n

PE 6 P 110/721 RS 168 supersedes 12.71 RQ 250/1100 PA 131 D (1) RQ 250/1100 PA 131 D (2) RS 168Z Büssing company: RS 168 RQ 250/1100 PA 132 D (3) S 12 DA 61 engine: (310 PS -1)(286 PS -2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(Ckecking  $^{+0,15}_{-0,05}$ )

(280 PS -3)

Port closing at prestroke

estoil-ISO

2.8 + 0.1

mm (from BDC)

Cy1. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,8 - 14,5	0,6			
600 600 600	6 12 15	2,7 - 3,7 13,0 - 14,5 17,5 - 19,2				
200	6	0,4 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

RQ .. 131 D

Checkin PRG che rev/min	Control rod travel	Full-load s Setting po rev/min 3	•	•	rev/min	Idle spec Setting p rev/min 7	Control rod travel		cifications 5 Control rod travet mm	Torque o	Control rod (3) travel mm
500	15,7-16,3	500	16,0	1120 1150 1200 1250	14,7-15,0 9,0-13,4 0 - 6,7 0	490	0	160 250	6,6-8,1 4,3-6,3 0 -2,4 0	620	15,8-16,0 15,0-15,2

Torque-control travel

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

full-load delivery on povernor control lever (est oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics			Starting fuel delivery Idle speed		
cm³/-1000 strokes		rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes		rev/min 6	nd travel cm <sup>3</sup> /1000 strokes:/ mm 7	
See page 2 !					•			
	control lever mp. 40°C (104°F) cm³/~1000 strokes 2	control lever (2) 40°C (104°F) cm³/~1000 strokes	control lever (2) (3a) cm³/-1000 strokes rev/min 2	control lever (2) (3a) (3a) (cm³/-1000 strokes rev/min 3 rev/min 4	control lever (2) (3a) (3a) (cm³/-1000 strokes 2 (2 (3a) (2 (3	control lever (2) (3a) (3b) (3b) cm³/-1000 strokes rev/min cm³/-1000 strokes 5	control lever (2) (3a)   Idle speed (3b)   Idle speed (3c)   Idle	

Checking values in brackets

## **B. Governor Settings**

RQ .. 132 D

BOS 12,3 d

-2

Checkin PRG che	g of slider	Full-load : Setting po	•	_	cifications (4)	idle spe Setting p	_		cifications (5)	Torque o		3)
rev/min	Control rod travel mm 2	rev/min 3	Control red travel mm 4	Control red travel rn/m 5	rev/min	rev/min 7	Control rod travel mm 8	rev/mjn 9	Control rod travel mm 10	rev/min	Control rod travel mm 12	
500	15,7-16,3 16,3	500	16,0		15,6-16,0 10,0-14,0 0- 7,5 0	480	0	150 250 350 39ຈ	6,7-8,1 4,2-6,3 0-2,2 0	-	-	

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	rery characteristics	Starting I	luel delivery ed Control
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	red travel cm <sup>3</sup> /1000 strokes / mm 7
110u	th131 D - 0,6 bar 175,0 - 177,0 ar 111,0 - 113,0		0,6 700 500	bar 168,0 - 172,0 166,0 - 170,0	100	210 - 230

Checking values in brackets

## **B.** Governor Settings

Checkin	g of slider ck (1	Full-load Setting p	•	-	cifications (4)	ldle sper	-		cifications (5)	Torque o	(3)
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	i _	rev/min	<b>!</b>	rev/min	travel
<u>'</u>	2	<del> 3</del>	4	5	6	/	8	9	10	11	12
			İ								
			İ								
			1			}					

Torque-con(rol travel on flyweight assembly dimension a =

mm

Speed regulation. At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting f	tuel delivery ed
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
168wi1	h131 D - 0,5 bar		0,5 t	ar		
1100 0 t 1100	161,0 - 163,0 ar 110,0 - 114,0		700 500	160,0 - 164,0 158,0 - 164,0	100	210 - 230
168wit	h132 D - 0,5 bar		0 t	ar		
1100	141,5 - 143,5		1100	125,0 - 129,0	100	21 - 23

Setting the manifold-pressure compensator:

- 1. Basic setting of pump and governor (Section A-B) without manifold-pressure compensator.
- 2. Full-load delivery (data with charge-air pressure) at full-load stop screw of governor. Test fuel delivery characteristics. Mount manifold-pressure compensator.
- 3. Set start of adjustment at guide sleeve of manifoldpressure compensator.
- 4. Full-load (without charge-air pressure) at bell crank of manifold-pressure compensator.
- 5. End of adjustment adjustment test at n = 500 rpm rising pressure in bar:

Pump/governor	Start	End	Control-rod travel difference		
168/131 D	0.12-0.15	0.48-0.50	approx.	4.2 mm	
168Z/131 D	0.12-0.15	0.48-0.50	approx.	3.7 mm	
168/132 D	0.11-0.13	0.31-0.34	approx.	1.1 mm	

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 BET 12,0 a

1. Edition

En

PE 6 P 100 A 320 RS 247

EP/RSV 300-1100 P 1/806 D

supersedes -

company Berliet MS 635 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1.95-2.15)

mm (from BDE) RW = 10,0 mm

Rotational speed	Control rod travel	Fuel delivery	Oifference cm <sup>-/</sup> 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	2	cm <sup>1</sup> /100 strokes	4	2	3	6
1000	12,0	10,5-11,2	0,5			
600	9,0 12,0 15,0	3,0-4,3 8,8-10,2 14,8-16,7				
200	9,0	1,8-3,0	1			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	raled speed  Control rod  travel  mm  9	3 10 rev/min 10	rque control Control rod travel mm 11
ca. 61	1100 1140 1170 1150 1250 1350	16,0 12,6 9,4 10,0-12,5 3,5-6,3 2,0-2,5		out aux	xol iar		300 150 300 500 750	11,0 19,0-21,0 10,7-11,3 5,0-7,8 2,0-2,5		0 1,4-1,6

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	Speco minut	11361 .	uel delivery naracteristics	Starting f	uel delivery 5	<b>4a</b> Idi	e stop
Test oil te rev/min 1	cm/1000 strokes	Note changed to ) rev/min 3	rev/min	cm 1/1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	travel mm
LDA 1100 900 650	,9 bar  41,0-143,0  54,0-158,0  65,0-169,0	150-1170* 120-1240 <b>:</b>	LDA 500 LDA 850	0,43 bar 150,0-160,0 0 bar 111,0-115,0	100 300	min. 150 11,0-17,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84



#### Test instructions:

- 1. Basic setting (Section A) without smoke limiter.
- 2. Governor setting (Section B) without smoke limiter. Special sleeve position: Speed regulation up to 2.0 2.5 mm control-rod travel (WPP 001/4 Supplement 1, Section 1a, Paragraph 3, 4 and 5)
- Set full-load delivery (Section C)
- 3.1 Fuel delivery characteristics correct with torquecontrol capsule.
- 3.2 Speed limitation:  $n = 1135 \text{ min}^{-1}$  at 0.9 bar.
- 3.3 High idle
- 3.4 Preset smoke limiter while removed:
- 3.4.1 Set preload of escape element to 61.5 ± 6.5 N by means of nut Item 10.

  + lock nut with Loctite.
- 3.4.2 Unscrew screw Item 23 as far as it will go, then screw in by 1 turn and lock.
- 3.4.3 Set dimension "A" =  $10.1 \pm 0.1$  mm (without pressure: measured at lever Item 8 without seal from stop face to support surface of pin Item 4).

  The specification of dimension "A" was based on a seal (between manifold-pressure compensator and governor cover) of 0.5 mm thickness.
  - Apply 0.42 0.44 bar to stop. The actual value of dimension "A" must increase by  $0.85 \pm 0.1$  mm.

This value must be set by means of washers Item 15: End of adjustment at 0.62 - 0.68 bar. Note:

- + setting is by means of screw Item 11.
- + screw Item 11 and nut Item 10 must be turned simultaneously.
- + mount lock nut 10 and lock with tab washer Item 40.
- 3.4.4 Pin travel between 0.8 and 0 bar must be 2.85 3.15 mm

- 3.4.5 Apply 0.9 bar several times to manifold-pressure compensator and remove load again; check whether all parts (diaphragm rod, cam disk and escape element) move freely.
- 3.4.6 Check whether escape element performs a travel of at least 2.5 mm and whether the preload of the spring is still 61.5  $\pm$  6.5 N.
- 3.5 Mount smoke limiter.

  Using stop screw in diaphragm housing, set the delivery during naturally aspirated operation (0 bar).
- 4. Test/adjust starting fuel delivery and idle delivery.

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 13,8 s 1

1. Edition

PES 6 P 120 A 820 LS 249 Y

ROV 300-1000 PA 204/4 R

Komb.-Nr. 0 402 046 227

Fiat company. 8217.32.110

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	mm 2	3	4	2	3	6
1000	9,1-9,2	16,6-17,0	0,5(0,9)			
300	5,9-6,1	2,2-2,8	0,8(1,2)			
	]					

Adjust the fuel delivery from each outlet according to the values in §

### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control	1	Control rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	rod travel	rev/min (28)	lever	rev/min	mm (4)	lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1000	15,2-17,8	-	-	-	ca. 14	100	min.7,5	250	1,0-1,3
ca. 58	8,1 4,0	1040-1050 1115-1145					300	5,9-6,1	500 750 1000	4,1-4,8 6,1-6,3 7,9
!	1300	0-1,0			}	300-395				
		202				<b>3</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter			Fuel deln high idle s	very characteristics (Se peed (Sb)	Starting idle switchin	. •	Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1000	169,0-173,0 (166,0-176,0)		-	-	-	<u>-</u>	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.84

## **Test Specifications** 2 **Fuel Injection Pumps** and Governors

WPP 001/4

ROL 16.31

4. Edition

Festoil-ISO 4113

PE 8 P 130 A 120 RS 3072 Komb.-Nr. 0 401 838 702

RO 750 PA 533

supersed Rolls Royce

CV8-300G engine

1 - 3 - 6 - 5 - 4 - 8 - 7 - 2 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3.50-3.60

mm (from BDd)ei RW 9,0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm 1/100 strokes	100 strokes	mm	cm 1/100 strokes	mm 6
1	2	3	14	2	3	
700	12,6+0,	31,8 - 32,2	$\int 0,5(0,9)$			
300	4,9-5,1	38 - 4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

hecking of s	lider	Full-load	speed re	gulation		Idle spec	ed regula			Torque c	ontrol
Con trave mm 2	trol rod	Setting por	Control rod travel mm	! !	cifications Control rod travel mm 6	rev/min	Control rod travel		cifications Control rod travel mm 10	rev/min	Control rod travel mm 12
-	-	-		11,6 3,5 0-1,0	750-755 755-785 900		-	-	-	-	-

Torque confroi travel on flyweight assembly dimension a

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104 F)	Control rod stop	Fuel deliv	ery characteristics	Starting f	uel delivery	
rev/min	cm <sup>1</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>1</sup> /- 1000 strokes 5	rev/min 6	cm 1/100 strokes	
700	318, 0-322, 0 (315, 0-325, 0)	-	-	-	-	-	

Checking values in brackets

5.84

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

E24

estoil-ISO 4113

## Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 SCA 11,0 m 1 3. Edition

PE 6 P 110 A 720 RS3006 ROV 200-1100 P/

RQV 200-1100 PA283KR RQV 200-1100 PA383KR ./. supersedes 7.78 company: Scania engine: DS 11

Instructions P. 3

All test specifications are valid for Bosch Fuel injection Pump Test Benches and Testers

#### A. Fuel Injection Public Settings

Port closing at prestroke

3,30-3,≅0 '2 25-2 85\

mm (from BDC)

Rotational speed rev/min 1		Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	14,0+0,1	17,7 - 17,9	0,6(0,8)			2,5 ± 0,1 ** (max. 2,2-2,9)
225	5,7-5,9	0,9- 1,3	0,2(04)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

RQV .. 283KR

deflection of control	rev/min Control rod travel	Control rod ta travel mm rev/min 28	Intermediate Degree of deflection of control lever 4	rated sporestring	ced Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3		mm 11
	1100 1400 12,9 4,0	15,2-17,8 01 1140-1150 1270-1300	-	-	-		100 225 335-3 650	min.7,4 5,7-5,9 95 = 2,0 0 - 1	300 800 1150	2,0-2,8 5,2-5,6 8,3

Torque control travel a =

mm Sp. 10-11 -

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuet delic high idle s	rery characteristics 50 peed 50	Starting idle switching	. •	Torque- travel	control 5  Control rod travel
rev/min	cm³/1000 strokes	rev/min (19)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1100	0,7 bar 177,0-179,0 (174,0-182,0)	1140-1150*	LDA 850 LDA 500	0 bar	100 225 RW 6 Streu	1	1100 850 600	13,9 13,0 13,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.84

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed		Sliding sleeve travel	
		Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3		4	5	6	7	8	9	10	_11
max.	1100	15,2-17	7,6	-	-	-	ca. 11	100 225	min.7,2 5,7-5,9		1,6-2,4 5,6-6,0
ca. 63		1140-115 1270-130 0 - 1,	00				(3a)	360-4		1170	8,2

Torque control travel a - mm -Sp. 10-11 -

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load of Control ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deliv	very characteristics (5a) speed (5b)	Starting to the switchi	$\sim$	Torque- travel	Control rod	
rev/min	cm 1/1000 strokes	rev/min 4a	rev/min	cm 1/1000 strokes	rev/min	cm=/1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1100	1,0 bar 176,5-179,5	1140-1150*	LDA 850	1,0 bar	100	190 - 240	1100	14,0+0,	
	(174, 0 - 182, 0)			(151, 0-163, 0)	225	9 - 13	850	13,0+0,	
			LDA	0 bar	RW 6	26,5-36,5		13,2+0	
			500	133,0-137,0 (131,0-139,0)		ug. max.4 (7)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

## B. Governor Settings

Upper rated	speed	<del></del>		Intermediate	rated spe	ed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection	rev/min (Control	Control rod	<b>(19)</b>	Degree of deflection	1	Control rod Itravel	Degree of deflection	l	Control rod   travel		$\odot$
of control lever	rod travel		(28)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	$\sim$	4	5	6	7	8	9	10	11
											'
			ı								
									•		
					1						
					}					1	
					۱,	1	(3a)			İ	
	L				<u> </u>			<u> </u>		<u> </u>	<u> </u>

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-foad d Control-ro Test oil ten		intermediate speed				Starting fuel delivery ldle switching point		Control rod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/mາກ	cm³/1000 strokes	rev/min		ten/win	travel mm
j۱	2	3	4	5	6	7	8	9
					Ì	'		
					ŀ			
			ľ		Ì		<b>i</b> i	
		`	ļ		1		1	
			1			•		
					1			1

Checking values in brackets

\* 1 mm less control rod travel than col 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

0.00			
Pump/governor	Setting	Measurement	Control rod #WWXXXX
	Gauge pressure = b	ar Gauge pressure = bar	
3006 mit 283KR) und 383KR)	0,40	0,25 1,0 0	12,8 - 12,9 11,9 - 12,0 14,0 - 14,1 11,8 - 11,9
			·

Notes XXXXXXXX (it was a review n and the notes of the no

#### Notes:

- 1. Start-of-delivery test without, fuel delivery test with Robo diaphragm.
- 2. After full-load setting, set stop screw in manifold-pressure compensator housing to 0.5 mm control-rod travel more than full-load control-rod travel.
- 3. Additional start test: At n = 0 min  $^{-1}$  and with control lever vertical, operate start knob = 20 21 mm control-rod travel must be reached.
- 4. \*\* In case of large scatter, correspondingly change preload of valve spring.
- 5. High idle \*\*\*: Raise engine speed until control-rod travel of 6 mm is reached and measure scatter.

Testoil-ISO

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 ROL 16,3 1 1 1. Edition

RO 750 PA 533 PE 8 P 130 A 120 RS 3072-1 Komb.-Nr. 0 401 838 703 1-3-6-5-4-8-7-2- je 45° ± 0,5° (± 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes 7.83 company: Rolls Royce CV8-300 G

engine

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) RW = 9.0-12.0 mm

		3,45-3,65)	<u>,</u>	10N - 310	7-1230 Hill	
Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,6+0,1	30,2-30,6	0,5(0,9)			
300	4,7-4,9	3,6-4,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checking of slider PRG check Control rod	Full-load Setting	speed re point Centrel	-	cifications (4)	Idle spec Setting p			cifications 5	euprof	control Control rod
rev/min mm	rev/min 3	red travel	red travel	rev/min 6	rev/min 7	red travel		travel mm 10	rev/min	travel mm 12
	-	-	11,6 3,5 900	775-785	•	_	_	•	-	<b>-</b>

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

750-755 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	Contret
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
700	302,0-306,0 (299,0-309,0)	-	-	<u>-</u>	-	<b>-</b>

Checking values in brackets

5.84

## Test Specifications Fuel Injection Pumps (A) and Governors

WPP 001/4 VOL 12,0 g 1

2. Edition

En

PE 6 P 120 A 320 RS 3075 RSV 200-1000 P 4/421 Komb.-Nr. O 401 876 730 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 7.83

company Volvo

engine TID 120 F/PP

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,55-2,75)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>-/</sup> 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>-//</sup> 100 strokes	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	22,6-22,8	0,5(0,9)			2,5 <sup>±</sup> 0,1
200	5,6-5,8	2,3-2,9	0,8(1,2)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

	r rated speed		Intermed	diate rated	speed	1(~)			IX 9 /			
deflection	Control rod travel	travel	Į			Control- lever		Control rod travel		Control rod travel		
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	<b>л</b> т 9	rev/min 10	mm 11		
	800	0,3-1,7		-	-	ca.20	200	5,2	-	-		
loose	x =	4,0					200 255-31	5,6-5,8 5 = 2,0	Î			
ca.58	10,3 4,0 1230	1040-1050 1065-1095 0,3-1,7					255-31	0 = 2,0				

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	III-load stop	Rotational- speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp 40°C (104°F) cm <sup>-/</sup> 1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>4</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
700	226,0-228,0 (223,0-231,0)	1040-1050*	-	-	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

Geschaftsbereich KH. Kundendienst. Ktz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 12,0g

2. Edition

En

estoil-ISO 4113

PE 6 P 120 A 320 RS 3075

RSV 650-750 P4/421

supersed § 81
company Volvo
engine TID 120 FG

Fombia-Hr. o hot 276 718

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
700	11,8+0,1	23,3 - 23,5	0,5(0,9)			
650	4,0-4,2	2,2 - 2,6	0,5(0,7)			
		,		Ī		
			1			
	<b>{</b>			l		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1	rated speed		Intermediate rated speed  Degree of			4 Lower	r rated spe	eed Control rod	3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	deflection of control lever	rev/min	travel	deflection of control lever	rev/min	travel	rev/min	travel mm
<u>'</u>	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,7	-	-	-	ca.33	650	4,1	_	-
10036	X =	2,75					650	4,0-4,2		ļ
<b>5</b> a.37	10,8 4,0 930	750-755 775-785 0,3 - 1,7					650 -	710=2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuei Injection Pump with Fitted Governor

2 Full-to	pad stop	6 Rotational- speed limitat		el delivery tracteristics	Starting Idle	fuel delivery	5a) idle stop		
Test oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strakes 2	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	233, 0-235, 0 (230, 0-238, 0)	750-755*	-	<del>-</del>	-	-	-	-	

Checking values in brackets

1 mm less control rad travel than col. 2

5.84

2

## Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MB 11,4 i 8
1. Edition

En

PES 6 P 120 A 820 LS 3077-10

RQ 300/1100 PA 585

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes-

company Daimler-Benz OM 407 LA

Komb.-Nr. 0 402 046 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

4.0 - 4.1

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDZ)/1. 6

Rotational speed rev/min	Control rod travel .	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,5+0,1	21,3-21,5	0,5			
300	5,5-5,7	1,4-2,0	0,8			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Checking o	$\sim$ 1	Full-load s Setting po	•	_		Idle spec Setting p	_		cifications (5)	Torque o	(3
	ontrol red avel m		Control red travel mm 4	Control red travel mm 5	rev/min	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod Travel
	9,2-20,8 max. 46°	650	20,0		1145-1160 1200-1230	300	4,9	300	min. 6,5 4,8-5,0 10 = 2,0 mm	•	-

Torque-control travel on flyweight assembly dimension a =

mm

1145-1160 min-1 Speed regulation At 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	2	Control rad stop	39	Fuel delive	ery characteristics	<b>3</b> b	Starting f	uel delivery d I Contra
rev/min	cm <sup>3</sup> /-1000 strokes		rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes/ mm
LDA 1100	0,70 bar 213,0-215,0		•		LDA 600 LDA 500	0,70 bar 201,0-207,0 0 bar 146,0-148,0		100	170,0-190,0

Stroking with a characteristic

5.84

**BOSCH** 

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung c: 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

MB 11,4 i 8 - 2

Testatn

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES6PLS3077-10 + RQPA 585	0		10,9 - 11,1
		0,31 0,41	11,9 - 12,0 12,7 - 13,0

Notes

(1) when n

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 VOL 10,0 o 3. Edition

**Testoil-ISO 4113** 

PE 6 P 110 A 320 RS 3080 Komb.-Nr. 0 401 846 745 ROV 250-1100 PA 589

superseded . 83 company VOT VO engine. TD 100 GA

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	itroke (	3,5-3,6 3,45-3,65)	mm (from BDC) <sub>2</sub>	RW 9,0	- 12,0 mm	······
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12,3+0,1 3,8-4,0	16,7 - 16,9 1,5 - 1,9	0,4(0,75 0,3(0,6)			2,5 ± 0,1 (2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed		Lower rated	speed	•	Sliding s	leeve travel
deflection	rev/min Control	Control rod travel	<b>(b)</b>	Degree of deflection		Control ro	d	Degree of deflection		Control rod travel		0
of control lever	rod travel	mm rev/min	28	of control lever	rev/min	mm	<b>①</b>	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6		7	8	9	10	11
max•	1180	15,2-17	.8	-	-	-		ca. 8	100	min.5,3 3,8-4.0		0,6-0,9
ca. 63	4,0		55						250 300-3		600 670- 1040	5,4-6,4 6,4-6,6
	1350	0 - 1.	,0					3			1100	7,3
								<b>③</b>	<u> </u> 			

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics 5e poed 5b	idle	fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1 <b>000</b> strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,75 bar 167,0-169,0 (164,0-172,0)	1160-1170 *	LDA 700	0 bar 120,5 - 123,5 (118,0-126,0)		160,0-190,0 156,0-194,0 = 20,0 - 21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.84

## D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 o

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

500			
Pump/governor	Setting	Measurement	diminution Control rod XXMXXXXXX difference XXXXXXXXX
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
LS 3080 +	0,90		12,3 • 12,4
PA 589		0	9,8 - 9,9
		0,55	12,0 - 12,1
		0,34	103 - 105
·			

Notes

(1) when n -

rev/min and gauge pressure =

bar ( = maximum full-load control rod travel)

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 SSC 10.5 a

2. Edition

PES6P120A320RS3092-1

RQV320-1300 PA 654

supersedes . 82 companySSCM

Komb.-Nr. 0 402 046 738

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test engine: 6LC520 S2 277 kW(376 PS)

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) (2.75-2.95)

= RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1280	13,3+0,1	19,8-20,0	0,5(0,9)			
320	7,9-8,1	2,0-2,6	0,8(1,2)			
			Į			

Adjust the fuel delivery from each outlet according to the values in [

## **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lowerra	ed speed		Sliding sleave travel	
Degree of deflection of control	rev/min Control	travel	<b>(e</b>	Degree of deflection		Control rod travel	Degree o	1 I	Control rod travel	0.10.1.19	0
lever	rod travel	rev/min (2	20	of control lever	rev/min	mm (4	of contro lever	rev/min	mm (3)	rev/min	nm.
1	2	3		4	5	8	7	8	9	10	11
max.	1305	15,2-17,8	3	-	-		ca.1	6 100	min.9,5	300	1,3-1,5
ca.65	12,3	1325-1335	5					320	7,9-8,1	630	3,7-4,0 5,5-5,7
		1415-1445					β50 <b>-</b> 46	0		970 1300	8,4
	1550	0 - 1,	Ü				39				

Torque control travel a = -

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 timitation intermediate speed			Starting Idle switching		Torque- travei	control (5)
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1280	198,0-200,0 ( 195,0-203,0 )	1325-1335*	-	•	100	19,5-21,0 mm RW	•	-

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

5.84

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 31,8 a 1

1. Edition

PE 12 P 130 A 120 RS 3094-1 Komb.-Nr. 0 401 830 705 RQV 350-900 PA 618

supersedes\_

company: Baudouin

engine. V 12 P 15 SRCN

1-12-9-4-5-8-11-2-3-10-7-6 0-45-60-105-120-165-180-225-240-285-300-345° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke	3,2-3,3 3,19-3,35)	mm (from BDC)			
Rotational speed	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	- 6
900	11,7+0,1	32,8-33,3	0,6(1,05			_
350	3,9-4,1	2,0-2,7	0,95(1,3			
1					<u> </u>	_l

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Sattings**

Upper rated a	Opper rated speed Inte				eed	Lower rated	speed		Sliding sleeve travel	
	rev/min Control rod travel mm 2	Oontrof rod travel mm rev/min 2s	deflection of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	rev/min	mm 11
max.		15,2-17,8	-	-	-	ca. 22	350	3,9-4,1	325 500	1,2-1,6 3,1-3,8
ca. 60	10,7 4,0 1150	1000-1030			1	350 <b>-4</b> 50		•		6,0-6,4 7,9
						<b>39</b>				

Torque control trável a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel deliv	rery characteristics 56 peed 50	Starting Idle switchir	. •	Torque- travel	Control cod
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
900	328,0-333,0 (324,0-337,0)	940-950*	-	-	~	-	-	-

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

5.84

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SSC 13,9 a

1. Edition

PES 8 P 100 A 520/4 RS 3096 Komb.-Nr. 0 402 048 700

①

RQV 300-1250 PA 629

supersedes\_

company: SSCM

engine: V8-520 NS

197 kW

1-2-6-3-4-5-7-8 je 45  $^{\circ}$   $^{\pm}$  0,5  $^{\circ}$  ( $^{\pm}$  0,75  $^{\circ}$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,8-2,9 rt closing at prestroke (2,75-2,95

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,5+0,1	10,5-10,7	0,35(0,6)			
300	8,4-8,6	1,3-1,7	0,35(0,55			

Adjust the fuel delivery from each outlat according to the values in

## **B. Governor Settings**

Upper rated a	peed	\		Intermediate	rated sp	eed	Lower rated speed			Sliding sleeve trave		
deflection	rev/min Control rod travel	Control rod travel		Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel			
lever	mm	rev/min (			rev/min		lever	rev/min	mm (3)	rev/min	mm 11	
1	2	3		4	5	6	7	8	8	10	<del>- ''</del>	
max.	1310	15,2-17	,8	-	-	-	ca. 17	100	min. 10,0	300	1,3-1,4	
ca. 65	11,5 4.0	1290-130 1390-142						300	8,4-8,6	950 1250	5,4-5,6 7,9	
ļ	1550	0 - 1.0					350-460	j		]		
1		i •					39	ļ			 	

Torque control travel a =

mm

## C. Settings for Fuel injection Pump with Fitted Governor

Full-load d Centrol-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deliv	very characteristics (5e)	Starting Idle awitchir	. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	travel mm
1250	105,0-107,0 (103,0-109,0	1290-1300 <b>*</b>	-	-	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2 5.84

## Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 10,0 g 2

2. Edition

PE 6 P 110 A 320 RS 3108 Z

Komb.-Nr. G 401 846 758

RQV 250-1100 PA 649

supersedes

company:

Volvo THD 100 EB

11.82

engine:

160 kW (218 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	stroke	(2.95-3.15)	mm (from BDC)						
Rotational speed	Control rod travel	Fuel delivery	Difference cm³/	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)			
rev/min	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6			
700	10,5+0,1	12,1-12,3	0,4(0,8)			2,5±0,1			
250	5,4-5,6	3,2-3,6	0,3(0,6)			(2,2-2,9)			

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

	rev/min Control rod travel	Control rod ta travel mm (2a)	Intermediate Degree of deffection of control lever	rated sports rev/min	Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding s rev/min 10	mm
max.	1175	15,2-17,8	-	-	_	ca.10	100 250	min.6,9 5,4-5,6	500	0,7-0,9 4,2-4,8
ca.56	9,5 4,0 1350	1140-1150 1205-1235 0-1,0					350-	410=2,0	660 bis 1040 1100	6,4-6,6 7,3
				İ		<u> 3</u>				

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr	atoo	Ilmitation high idle speed (5b) idle			Torque- travel	Control Control rod		
	•	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,75 bar 121,0-123,0 (118,0-126,0		LDA 700	0 bar 104,5-107,5 (102,0-110,0		160,0-190,0 =20,0-21,0 mm RW	-	<u>-</u>

Checking values in brackets

1 mm less control rod travel than col. 2

5.84

## D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 q2

	Test	at	n	
--	------	----	---	--

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor Setting Measurement Control rod travel	
Control rod travel difference	
Gauge pressure = bar Gauge pressure = bar mm (1)	
PE 6 PRS 3108 Z + RQVPA 649  0,25  0,75  0  9,6-9,8  10,3-10,4  10,5-10,6  9,6-9,8  10,0-10,2	

Notes

(1) when in

rev/min and gauge pressure =

bar (\* maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 STE 12,0 b 1 3. Edition

PE 8 P 110 A 121 LS 3113

RQV 250-1100 PA 652

Komb.-Nr. 0 401 858 701 1 - 5 - 8 - 4 - 6 - 3 - 7 - 2 je  $45 \circ \pm 0.5 \circ (\pm 0.75 \circ)$  supersedeg 83 company Steyr engine WD 815.64

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke	2,0-2,9 2.75-2.95)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1100	11,7+0,1	14,9-15,1	0,4(0,75)			
250	6,1-6,3	1,5-2,1	0,4 (0,7)		-	
	•					

Adjust the fuel delivery from each outlet according to the values in [

## **B. Governor Settings**

Upper rated :	peed		Intermediate	rated sp	ed	Lower rated	speed	4	Stiding s	leeve travsi
deflection	rev/min Control rod travel mm 2	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca.11			1_	0,7-0,9 3,7-4,1
ca. 61		1140-1150 1195-1225 0 - 1,0						475=2,0	800 1100	5,4-5,7 7,9
						<b>3</b>				L

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr	d stop np. 40°C (104°F) 2	Rotational-speed (20) limitation intermediate speed rev/min	high idle s	very characteristics (5e)	Starting fuel delivery 6 idle switching point rev/min cm³/1000 strokes		Torque- travel	Control 5  Control rod travel mm
,	2	3	4	5	6	7	8	9
LDA 1100	0,9 bar 149,0-151,0 (146,0-154,0)	1140-1150 *	LDA 500	0,9 bar 142,0-146,0 (139,0-149,0		200,0-240,0 (196,0-244,0	-	•
			LDA 500	0 bar 96,0-98,0 (94,0-100,0)				

Checking values in brackets

1 mm less control rod travel than col. 2

4.84

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rey/min decreasing pressure - in bar gauge pressure

STE 12,0 b 1 - 2

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 8P LS 3113 + RQV PA 652	0,9	0 0,53 0,39	11-7-11,8 9,3-9,4 11,2-11,3 9,8-10,0

Notes

(1) when n

rev/min and gauge pressure =

bar ( \* maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps 2 2 and Governors

WPP 001/4 MB 14.6 a 1 2. Edition

PE 8 P 110 A 320 LS 3802

RQ 300/1150 PA 437-3

supersedes 9.83 Daimler-Benz

OM 422 184 kW

Komb.-Nr. 0 401 848 755

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \div 0,5^{\circ}$  ( $\div 0,75^{\circ}$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3.95-4.15)

mm (from BDC)Zy1. 8

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	11,3-11,5	0,4(0,8)			
300	8,5-8,7	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u.5	0,6(0,9)		1	
i						

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checking PRG che	g of slider ck (1)	Full-load s Setting po	•	_		Idle spec Setting p	•		cifications (5)	Torque o	(3)
rev/min	Control rod travel mm			Central rad travel rnm 5	rev/min	rev/min 7	Control red travel mm 8	rev/min 9	Control rod travel mm		Control rod travel mm
650	13,2-14,0	650	13,6	10,0 4,0 1350	1195-1210 1230-1260 0-1,5		8,1	100 300 400-	min.8,5 7,0-7,2 440 = 2,0		11,0-11,1 11,2-11,4

Torque control travel

 $\overline{0,2}$ 

1195-1210 min-1

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor of Test oil ter	letivery on control tever np 40°C (104°F)	Control rod stop (3a)	Fuel deliv	ery characteristics 3b	Starting f	Control
rev/min	cm³/~1000 strokes	rev/min 3	rev/min	cm³/-1000 strokes	rev/min	red travel cm <sup>3</sup> /1000 strokes/ mm 7
1150	113,0-115,0 (110,5-117,5)	,	600	92,0-96,0 (89,0-99,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

5.84

①

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 a 2 2. Edition

En

PE 8 P 110 A 320 LS 3802

ROV 300-1150 PA 486-3

supersed 9.83

Komb.-Nr. 0 401 848 756

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

company Daimler-Benz engine. OM 422 184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BDC) Zy1. 8

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve)
1150	11,0:0,1	11,3-115	0,4(0,8)			
300 600	8,4-8,6 -	1,4-2,0 C, Sp. 4 u.5	0,4(0,7) 0,6(0,9)			, , , , , , , , , , , , , , , , , , ,

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediáte	rated sp	eed	Lower rated	speed	4	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Controi rod travel mm 2	Control rod travel mm rev/min 2s	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	ı <sup>①</sup>
max.	1200	15,2-17,8	-	-	-	ca.18		min.9,5		1,0-1,2
ca.64	10,0 4,0 1400	1190-1200 1240-1270 0-1,5				350-700	300	8,0-8,2		3,4-3,7 4,9-5,3 7,7
						<b>3</b> a				

Torque control travel a = 0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b timitation intermediate speed	Fuel deli- high idle :	very characteristics(5a) speed (5b)	Starting idle switching	. •	Torque- travel	Control ro
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1150	113,0-115,0 (110,5-117,5)		600	92,0- 96,0 (89,0- 99,0)	100	140,0-160,0 (136,0-164,0	1150 600	11,0+0 11,2+0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.84

40

WPP 001/4 MB 14,6 q
1. Eaitich

En

PE8P 120 A 320 LS 3807-10 RQ 300/1150 PA 546-3

1-8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} + 0.5^{\circ} (+0.75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes—Daimler-Benz
company
engine OM 422 A
243 kW
Komb.-Nr. 0 401 848 733

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Rump Settings

Port closing at prestroke

(3,95-4,14)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,8-16,0	0,5(0,9)			]
300	5,2-5,4	1,2 - 1,8	0,8(1,2)			į į
750	-					
500	-	C, Sp. 4 u. 5	0,7(1,1)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Control rod travel rev/min 1 2 3 4 5 600 20,0 9,7 1200-1215 300 4,5 100 min.6,0 1150 750 10,7-10,8 1250-1280 340 380=2,0 900 10,9-11,3	Checking PRG che	g of slider	Full-load s	•	•	cifications (4)	idle spec Setting p	•		cifications (5)	Torque (	(3)
VH = max. 46'   4.0   1250-1280   300   4,4-4,6   750   11,0-11,3		travel	rev/min 3	rod travel	red travel rnm	1 _	rev/min	rod travel	1	travel mm	1	Control rod travel
			600	20,0			300	4,5	300	4,4-4,6	750	11,0-11,3

Torque-control travel on flyweight assembly dimension a =

0,3

1200-1215 min Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor c Test oil ten	elivery on ontrol lever np. 40°C (104°F)	Control rod stop  3a	Fuel deliv	ery characteristics	Idle spee	Contrar
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm³/~1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7
LDA 1150	0,7 bar 157,5-159,5 (154,5-162,5)	•	LDA 750 LDA 500	0,7 bar 173,5-175,5 (170,5-178,5) 0 bar 139,0-141,0 (136,0-144,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

5.84

## D. Adjustment Test for Manifold Pressure Compensator

Testain 500	rev/min decreasing pressure - in	MB 14,6 q		
Pump/governor	Setting	Measurement	diminution Control rod travel difference	
· · · · · · · · · · · · · · · · · · ·	Gauge pressure - bar	Gauge pressure = bar	mm (1)	
PE 8 FLS3807-10 +RQPA 546-3	0	,0,40 0,47	10,3-10,5 10,4-10,5 11,0-11,2	

Notes

(1) when n

rev/min and gauge pressure =

bar ( maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 NPP 001/4 FIA 17,2 c and Governors

1. Edition

supersedes

PE 8 P 120 A 920/5 LS 3812 RQV 300-1050 PA 475 1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je 45°±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

companyFiat engine 8281.22.050

> Komb.-Nr. 0 401 848 749

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres		45-3.65)	mm (from BDC)			
Rotational speed		Fusi delivery	Difference	Control rod travel	Fuel delivary	Spring pre-tensio ang (torque-contro! velve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1050	10,9+0,1	18,3-18,5	0,5(0,9)			
300	5,3-5,5	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated s	peed	1	Intermediate	rated sp	eed	Lower rated	speed	Sliding sleeve travel		
deflection of control	rev/min Control rod travel mm	Control red travel mm rev/min (2a)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/mia	Control rod travel	rev/min	mm ①
1	2	3	4	5	6	7	8	9	10	11
max.	1080	15,2-17,8	-	-	•	ca.10	100 300	min. 6,9	300 450	1,6-1,7 3,5-4,2
ca. 60	9,9	1090-1100					300	79-717	800 1050	6,1-6,3
! ·	4,0 1300	1180-1210 0 - 1,0				310-415				
			<u> </u>		<u> </u>	<b>39</b>				ļ

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed 2b limitation intermediate speed	Fuel delin high idle s	very characteristics (5a)	Starting Idle switchir	. •	Torqua- travel	Control ©
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
LDA 1050	0,7 bar 183,0-185,0 180,0-188,0	1090-1100*	LDA 1050			190,0-210,0 (186,0-214,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

多。84

-2-

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500	rev/min decreasing pressure - in	bar gauge pressure	
Pump/governor	Setting	Measurement ;	diminution Control rod travel difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
PE 8 P LS 3812 + RQV PA 475	0,70	0	10,9-11,0 8,5-8,6
		0,30 0,25	10,4-10,5 9,1-9,4

Notes

(1) when n

rev/min and gauge pressure

bar ( maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 14.6 p 2. Edition

PE 8 P 120 A 320 LS 3816

Port closing at prestroke

RSV 650-1150 P0/823

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45  $\pm 0.5$  ( $\pm 0.75$ °) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersede 7.83 company Daimler-Benz OM 422 A 206 kW

Komb.-Nr. 0 401 878703

A. Fuel Injection Pump Settings

4.0 - 4.1

mm (from BDCZy1. 8 (3.95-4.15)

mm		travel	1	Fuel delivery	Control rod travel	Rotational speed
6	cm <sup>-/</sup> 100 strokes	mm 2	cm <sup>-/</sup> 100 strokes	cm <sup>-/</sup> 100 strokes	mm 2	rev/min
			0,5 (0,9)	14,1-14,3	9,5-9,6	1130
<u>}</u>			0,8 (1,2)	1,6-2,2	3,5-3,7	650
			0,8 (1,2)	c, Sp. 4 u.5		1000
				c, Sp. 4 u.5		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

11 ' /	r rated speed Control rod travet mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Controt rod  travel  mm  9	<b>9</b>	rque control Control rod travel min
loose	800 x =	0,3-1,0 2,0	-	-	-	-	æ	-	1130 1000 1050	9,5-9,6 10,1-10,2 9,8-10,0
ca.40	8,5 4,0 1400	1160-1170 1185-1200 0,3-1,7							1050	3,0-10,0

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

ピツ	ill-load stop emp. 40 C (104 F)	Rotational speed limital	11.7/11	et delivery paracteristics	Starting to	uel delivery 5	IControl rod	
resi (iii le revimin 1	cm /1000 strokes	changed to 1 rev/min 3	rev/min	cm:/1000 strokes 5	rev/min	cm v1000 strokes 7	rev/min 8	travel mm
1130	141,0-143,0 (138,0-146,0)	1160-1170*	1000	152,0-158,0 (149,0-161,0)	100	140,0-160 (136,0-164		-

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.84

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d Allemagne par Robert Bosch GmbH.

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 1 4. Edition

En

PES3A85D410/3 RS 2642 RSV325-1150A8B2102-1L Romb, 3tr. 0 400 863 007 1-3-2 je  $120^{\circ}$   $\stackrel{+}{=}0.5$  ( $\stackrel{+}{=}0.75$ )

supersedes 2.84

company KHD

engine

F3L 913

42 kW (57 PS)<sub>1</sub> 2300 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Schlepper D 6007-S23

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2.45-2.65)

mm (from BDC)

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm	cm³/100 strokes	cm <sup>1</sup> / 100 strokes	mm m	cm³/100 strokes	mm
2	3	4	2	3	6
11,5+0	1 7,1-7,	0,3 (0,4	5)		
8,9-9	1 1,7-2,3	0,2 (0,4	()		
			}		:
	Ì				
	travel mm 2 11,5+0	travel mm cm³/100 strokes 2 3 11.5+0 1 7,1-7,	travel   cm³/100 strokes   cm¹/100 strokes   2   3   4   11.5+0   1   7.1-7.   0.3 (0.4)	travel travel travel travel travel 2 11,5+0,1,7,1-7, 0,3 (0,45)	travel

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 Tor	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
	800	0,3-1,0	-		-	ca.20	325	8,5	1150	11,5+0
100se	<u>x</u>						100 325	min.19, 8,9-0,1 545=2,0		11,8+0 11,6+0
⑤ ca.	4,0 1350						405	343-2,0		

\*\* Set speed regulation before torque control.

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

nd stop	6 Rotational- speed limitat.			Starting fuel delivery Idle		(5a) Idle stop	
40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
70,5-71,5 (68,5-73,5)	1190-1200	700	65,0-67,0 (63,0-69,0)	100	133,5-143	5 -	-
	40°C (104°F) cm³/1000 strokes 2	40°C (104°F)  cm³/1000 strokes  2  speed limitat.  Note changed to rev/min  3	speed limitat.  40°C (104°F)  Cm³/1000 strokes  2  3  changed to rev/min  rev/min  7  7  7  8  8  9  10  10  10  10  10  10  10  10  10	speed limitat.  40°C (104°F)  Cm³/1000 strokes  rev/min  rev/min  rev/min  cm³/1000 strokes  3  4  5	speed limitat.  40°C (104°F)  Cm³/1000 strokes  rev/min  rev/min  rev/min  rev/min  fev/min	speed limitat.  40°C (104°F)  Cm³/1000 strokes  rev/min  rev/min  rev/min  cm³/1000 strokes  rev/min  fev/min  cm³/1000 strokes  rev/min  fev/min	speed limitat. Characteristics Idle  40°C (104°F)  cm³/1000 strokes rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min 6 7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 KHD 5,7b 3. Edition

VA 6/100 H 1400 BR 48

supersedes

7.71 KHD

company

F 6 L 912

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Intructions and Test Equipment

**VDT-WPP 161/4 B** 

Pre-stroke setting

0,3 <sub>mm</sub>

Plunger lift of 1,0 mm related to outlet "E".

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	4,8-5,8	mm .		
1.2 Supply pump pressure	1100	6,0-6,5	kp/cm²		
1.3 Full-load delivery without	900	56,0-57,0	cm <sup>3</sup> /1000 strokes		2,5
charge-air pressure Full-load delivery with charge-air			cm <sup>3</sup> /1000 strokes		
pressure 1.4 Idle speed regulation	300	12,0-18,0	cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind.100	cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1460	36,0-44,0	cm <sup>3</sup> /1000 strokes		

2. Test Sp	ecificatio	<b>NS</b> Checking value	es in brackets		
2.1 Tirning device	rev/min mm	600-750(570 Beginn	-780) (4,	1200 5-6,1)	1270-1390 6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min kp/cm²	100 1,1-1,6(0,9-1		1100 -6,7)	1400 7,0-7,5(6,8-7,7)
Overflow delivery	rev/min cm³/10 s	500 mind.25		1400 25 (40-1	40)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1490-1700 (1470-1720) 1530 1460 1350 900 500	0 max. 12, (35- 51,5-54,5(50, (55, 50,5-53,5(49,	45) 5-55,5) 5-57,5)	
	Stop	1,400	0		
Idle stop	Full	410-470 (390-490) 300	0 (11,	0-19,0)	
End stop	Start	100 300 mind. 200	mind. 100 20,0-50,0(19,0	0-51,0)	

Festoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions		
Pump  " = 25 ± 4°  " = 50 ± 8°  " = 30 - 8°  " = 60 ± 8°	Pump Dimension IV = 2,5 mm Dimension V = - mm		

63

46

WPP 001/4 KHD 5,7b 1 1. Edition

En

VA 6/100 H 1400 BR 48-1

2. Test Specifications

2 1 Timing device rev/min

estoil-ISO 4113

supersedes company KHD

Setting of the pointer at a stroke of 1 mm in relation to outlet "E"

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

1270-1390

6, 7-7, 4 (6, 4-7, 7)

Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1200	5, 1-6, 1	mm		
1 2 Supply pump pressure	1200	6, 4-6, 9	kp/cm²		
1.3 Full-load delivery without	900	56,0-57,0	cm <sup>3</sup> /1000 strokes		2,5
charge air pressure Full-load delivery with charge-air			cm³/1000 strokes		
pressure  1 4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind. 80	cm³/1000 strokes		
1 6 Full-load speed regulation	1460	36,0-44,0	cm³/1000 strokes		

1200

(4, 8-6, 4)

S Checking values in brackets 650–800 (620–830)

Beginn

	1	Degiiii	( 4,0 0, 1,	
2 2 Supply pump	rev/min kp/cm²	100 1,2-1,7 (1,0	1200 (6,2-7,1)	1400 7,1-7,6 (6,9-7,8)
Overflow delivery	rev/min cm³/10 s	500 mind. 25	1000 55-125 (40-140)	
23 Fuel deliveries				
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge air pressure kp/cm²
End stop	Full	1490-1700 (1470-1720) 1530 1460 1350 900 500	0 mind. 12,5 (35-45) 51,5-54,5 (50,5-55,5) (55,5-57,5) 50,5-53,5 (49,5-54,5)	)
	Stop	1400	0	
ldle stop	Full	410-470 (390-490) 300	(11,0-19,0)	)
End stop	Start	100 300	mind.80,0 20,0-50,0 (19,0-51,0)	

Angle to the stop-plate	Pre-setting dimensions			
Pump  a = 25 ± 4°  b = 50 ± 8°  c = 30 - 8°  d = 60 ± 8°	Pump' Dimension IV = 2,5 mm Dimension V = - mm			

WPP 001/4 KHD 3,8a 1 1. Edition

in

VA 4/110 H 1400 BR 50-2
BR 50-4

Pre stroke setting 0,2 mm
Setting of the pointer at

THE

company KHD
engine F 4 L 912-75 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B Pre-setting see reverse side

Pre stroke setting 0,2 mm Setting of the pointer at a stroke of 1 mm in relation to outlet "C".

2. Test Specifications Checking values in brackets

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1000	5, 8-6, 8	mm		
1 2 Supply pump pressure	1000	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	54,5-55,5	cm <sup>3</sup> /1000 strokes		
Full load delivery with charge air pressure		<u></u>	cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	250	9,0-15,0	cm³/1000 strokes		
1 5 Start	100	mind.110,	cm³/1000 strokes		
1.6 Full-load speed regulation	1460	36,0-44,0	cm³/1000 strokes		

2 1 Timing device	rev/min	430-560 (400		1000	1250-1370
•	mm	Beginn	(	(5,5-7,1)	9,7-10,4 (9,4-10,7)
2.2 Supply pump	rev/min	100		3000	1400
	kp/cm²	1,0-1,5 (0,8	-1,7)	(4, 6-5, 5)	5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min	500		1000	
	cm³/10 s	mind. 25	55-1	125 (40-140)	
2 3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes		Charge air pressure kp/cm²
End stop	Full	1520-1580 (1500-1600) 1460	0	(35,0-45,0)	
		1380		(46,5-51,5)	
		1000 500		(54,0-56,0) (46,0-51,0)	
		300	47,5-50,0	(40,0-31,0)	
	Stop	1400	0		
idle stop	Fult	290-340	0	<del></del>	
		(270-360) 250		(8,0-16,0)	
	Start	100	mind. 110,0		
End stop		500 mind, 200	30,0-42,5	(29,0-43,5)	

Angle to the stop-plate	Pre-setting dimensions
Pump  a = 25 ± 8°  b = 45 ± 8°  v = 30 - 8°  d = 60 ± 8°	Pump Dimension IV = 3,0 mm Dimension V = - mm

G7

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 3,1 a

3. Edition

E

PE 4 A 70 B 410 RS 301 PE 3 A 70 B 410 RS 321 EP/RSV 250-1000 A 8/312 D

supersedr3.64

PE 6 A 70 B 410 RS 329

engine F.. L 612

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	100 strokes	mm	cm <sup>-/</sup> 100 strokes	mm
1	2	3	4	- 2	3	6
1000	12,0	6,5-7,0	0,4			
1000 1000 200	6,0 18,0 6,0	1,2-1,9 10,9-11,9 0,7-1,5				

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

	er rated speed	d rev/min   Control rod	Interme	Intermediate rated speed			Low	3 forque control		
Degree of deflection of control	travel mm	travel mm rev/min	ļ			Control- lever deflection	rev/min	Control rod travel mm	rev/min	travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
ca.47	1000 1940 1080	10,0 6,0 2,0	vitho	vithout auxiliary			250 100 250	5,5 19,0-21,0 5,2-5,8	980 800 600	0 0,5-0,7 1,0-1,2
29	1020 1050 1100 1150	7,0-9,0 3,0-6,0 1,0-2,0 0 - 1.0	vith	auxil <sup>.</sup>	iary sį	ring	350 450 500	2,5-4,0 0 - 2,0 0 - 1,0	000	1,0-1,2

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>S</b>	ill-load stop	Rotational- speed limitat		Fuel delivery characteristics		uel delivery 5	4a) Idle stop   Control rod		
rev/min	cm <sup>1</sup> /1000 strokes	changed to ) rev/min 3	rev/min 4	cm <sup>1</sup> /1000 strokes 5	rev/min	cm½1000 strokes 7	rev/min 8	travel mm 9	
980	37,5-38,5	1010-130*	600 800	42,5-44,5 40,0-42,0	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2 10.83

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# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 1 g 10

1. Edition

PES 2 A 80 D 310/3 RS 1322

Komb.-Nr. 0 400 462 054

RSV\_325-1150 A 8 B 2011-1 L

company F 2 L 912 engine 25 kW bei 2300 min<sup>-1</sup> Tractor D 3607-

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1,85-2,05)

mm (from BDC)

Rotational speed	·		Difference	Control rod travel	Fuel delivery	Spring pre-tensionin (torque-control valve		
tev/min	mm ②	cm <sup>-</sup> /100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm <sup>-</sup> /100 strokes	mm		
1	2	3	4	2	3	6		
1150	10,9+0,1	5,5-5,6	0,25(0,4)			_j		
325	8,9-9,1	1,2-1,8	0,2(0,35)					
			İ		ļ			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

(1) Uppe	r rated speed		Intermediate rated speed			(4)	Lower	rated speed	3 Tarque control		
Degree of deflection of control lever	travel mm	Control rod   travel   mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod  travel  mm	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0	-	-	-	ca. 26	325	8,5	1150	10,9-11,0	
1.0036	x =	: 6,0					100	min.19,5	500	11,8-11,9	
ca. 60 <b>(28)</b>	9,9 4,0 1480	1190-1200 1320-1350 0,3-1,7					325 690 <b>-</b> 7	8,9-9,1   	1010	11,3-11,5	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	ill-load stop	Rotational speed limitat	39 f.	uel delivery paracteristics	Starting (	uel delivery 5	<b>4a</b> ) (d)	e stop
Test oil to rev/min 1	emp 40°C (104°F) cm //1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm*/1000 strokes 5	rev/min 6	cm·/1000 strokes 7	rev/min 8	Control rod travel mm
1150	54,5-55,5 (53,0-57,0)	1190-1200*	750	54,0-56,0 (52,0-58,0)	100	19,5-21,0 mm RW	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d. Allemagne par Robert Bosch GmbH.

①

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 15.8 k

1. Edition

PE 10 A 90 D 610/4 LS 2243

RQV 300-1250 AB 1005 DL

supersedes

1-10-9-4-3-6-5-8-7-2

 $0-27-72-99-144-171-216-243-288-315^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

company: KHD

engine:

F 10 L 413 L 199 kW (270 PS) 2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke (	1,50-1,60 1,45-1,65)	mm (from BDC)	mm (from BDC)							
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)					
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6					
1250	10,0-10,1	7,3-7,4	0,3(0,45)								
250	7,4-7,6	0,9-1,5	0,2(0,4)								
	i .	1		I	Į.	I					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Qontrol rod travel mm rev/min 3	(b) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1290	15,2-17	,8				ca.13	100	mind.7,5	200	0,2-0,8
ca.64	9,0 4,0 1500	1290-130 1335-130 0 - 1			·				90=2,0	600 1290	2,4-3,0 8,2
						<u> </u>	<u>3</u>	350-4	50		<u> </u>

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro	d stop	Rotational-speed (2b) limitation intermediate speed	Fuel deliv	very characteristics 5a poed 5b	Starting Idle switching	<u> </u>	Torque travel	Control Cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 atrokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel
1250	72,5-73,5 (70,5-75,5)	1290-1300	1000	67,5-70,5 (65,5-72,5) 70,5-73,5	100	14,0-15,0 mm RW	1000	10,0-10,1 10,0-10,2 10,4-10,6
			000	(68,5-75,5)				10,9-11,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.82

Geschäftsbereich KM. Kundendienst. Kfz-Ausrüstung. C: by Robert Boech GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany. Imprime en Republique Federale d'Altemagne par Robert Bosch GmbH.

 $\bigcirc$ 

Festoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 4,1 b

1. Edition

\_\_\_\_

PES 4 A 80 D 410 RS2346

EP/RS 325-1400 AO B699DL

supersedes =

companyK H D engine F 4 L 913

(87 PS)

Test RS governor according to WPP 001/4, KHD 1 c

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1.9 + 0.1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm 1/1/00 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm 1/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,1 - 3,5	0,4			
	6	0,1 - 0,6				
200	9	0,6 - 1,3				

Adjust the feel delivery from each outlet according to the values in [77]

## **B. Governor Settings**

Upper rated s	peed		Intermediate	e rated sp	eed	Lower rated	Lower rated speed			eeve trilvel
Degree of deflection of control leve:	rev/min/	Control rod 7ravel mm	Degree of deflection of control lever	tev/min	Control rod travet	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque c	ontrol travel
1	2	3	4	5	6	7	В	9	10	11
		15,8-16,5 11,9-13,3 7,7-9,8 2,8-5,8 0,3-1,0					325 300 400 500 1400 1470	8,3 8,4-9,1 6,0-6,8 3,5-4,2 2,2-2,8	1050 900	0 0,4-0,6 0,9-1,1 1,2-1,4 1,2-1,4

Torque control travel a

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro- fest oil ten rev/min		limitation		cm 1/1000 strokes	Idle switching point		Intermediate rotational speed Torque-control travel rev/min mm 8	
1400	68,5 - 70,5	1420	800	62,0 - 65,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Föderale d Allemagne par Robert Bosch GmbH.

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6,161

1. Edition

PES6A85D 410/3 RS2366

EP/RS 325/1325 AOB 691 DL

supersedes -

Komb.-Nr. 0 400 866 057

company KHD BF6L913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 1,9-2,0 Port closing at prestroke (1,85-2,05) mm

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm·/100 strokes	cm-/ 100 strokes	m:m	cm·/100 strokes	mm
1	2	3	4	2	3	6
1325	11,4+0,1	7,6-7,7	0,3(0,45)			
200	8,9-9,1	1,6-2,2	0,3(0,05)			
				:	Ì	
						,

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rate	t speed	(4)	Lowe	rated speed	(3) to	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control tever 1	mm 2	mm rev/min	4	5	6	dellection in degrees 7	rev/min 8	mm 9	rev/min	mm 11
loose	800	0,3-1,0	-	<del>_</del>	<u> </u>	VH ca.6	325	6.0	850	11,9-12,1
	X = 7	.0				FH ca.3		2,7-3,7	500	11,9- 12,
VHca.6 EH max 2a		1355-1365 1450-1480					800 1300 1400	2,7-2,9 2,0-2,2 0-1,0		
(28)	1630	0 - 1,0						0 -1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(C)	III toad stop	6 Rotational Sa Fuel delivery characteristics			Starting fuel delivery 5 4a Idle stop			
Test oil to	emp 40°C (104 F) cm*/1000 strokes	Note changed to 1 rev/min 3	rev/min 4	cm //1000 strokes	rev/min	cm1/1000 strokes		Control rod travel mm
LDA 1325	0,5 bar 75,5-76,5 (74,5-77,5)	1355-1365*	LDA 500	0 bar 45,0-48,0 (43,5-49,5)	100	110,0-120	,0	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Alfemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

Testatin

700

rev/min decreasing pressure - in bar gauge pressure

KHD 6,1 b 1

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PES 6 ARS2366 + EP/RSAOB691DL	0,50	0,38 0,10	11,4 - 11,5 11,1 - 11,2 9,4 - 9,8
			·

Notes

(1) when n

rev/min and gauge pressure

bar ( maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 6,1 a 5. Edition

En

PES 6 A 85 D 410/3 RS 2366 EP/RSV 325-1400 A8B674D, 707 D

supersed∈s

1.84 KHD

325-1150 A8B674D, 707 D

company engine

BF 6 L 913

RS 2415

Instructions P. 3 RS 2532

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 1,9+0,1

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm₹100 strokes	cm <sup>9</sup> / 100 strokes 4	mm 2	cm <sup>9</sup> /100 strokes	mm 6
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

EP/RSV 325-1400 A8B674D, 707 D

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed   Control rod travel   mm	3 To	rque control  Control rod  travel  mm
ca.69	1400 1450 1500	16,0 10,5 4,0	witho	ut aux	ciliar	ca.20 y spring	200	5,5 19 - 21	1400	0
ca.68	1400 1510 1600	ca.10,0 ca. 4,0 0,3-1,5	with	auxili 	iary S	pring	325 500 650	5,2-5,8 1,2-3,3 0 -1,5	500	1,2 - 1,4

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitat		iel delivery iaracteristics	Starting fuel delivery 5			Idle stop	
Test oil to rev/min 1	rev/min cm²/1000 strokes rev/min 2 3			cm\$1000 strokes	rev/min	cm <sup>4</sup> /1000 strakes 7	rev/min 8	Control rod travel mm	
LDA ***	0,7 bar	***	LDA ***	0,7 bar	100	119,5-	005	5 5	
(inrea	se by ± 1,0 cm³		LDA 500	0 bar 57,5 - 59,5		129,5	325	./.	

Checking values in brackets

\* 1 mm less control rod travel than col 2

## **B. Governor Settings**

EP/RSV 325-1150 A8B674D, 707 D

1 Uppe	r rated speed	rev/min	Interme	diate rate	d speed	(4)	Lowe	rated speed	(3) 10	rque control
Degree of deflection of control lover	Control rod travel mm	Control rod travel  mm rev/min  3	4	5	6	Control- lever deflection in degrees 7	rev/mi∛ 8	Control rod travel mm	rev/min	Control rod travel mm 11
ca. 50	1150 1200 1250	16,0 11,1 5.4	witho	out au	xiliar	ca. 21 y spring	325 200	5,5 19 - 21	1130	0
29	1220 1300 1380	7,5-10,4 1,3-3,6 0,3-1,5	with	auxil	iary s	pring	325 500 660	5,5-5,8 1,4-3,4 0 -1,5	500	1,0-1,2

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		Rotational- speed limitat		uel delivery naracteristics	Starting t	fuel delivery 5	4a Idle stop	
	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	s rev/min 8	Control rod travel mm
LDA	0,7 bar		LDA	0,7 bar	100	119,5-129,	5; 325	5,5**
	Instructions P.	3	LDA 500	0 bar 57,5 <del>-</del> 59,5				

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
all governors	0,38	0,10	0,2 - 0,3 1,6 - 2,0

Notes

(1) when n =

gauge pressure =

bar (= maximum fulf-load control rod travel)

En

<sup>\* 1</sup> mm less control rod travel than col. 2

## C. Settings for Fuel Injection Pump with Fitted Governor

	engine por Full load de Control roo Test oil terr	elivery	Rotational speed Fuel deliver limitation		ery characteristics	Starting Idle switchin	fuel delivery ng point	Intermedi rotational Torque-c travel	speed
-	řev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	mm
	1	2	3	4	5	6	7	8	
	BF 6 L	. 913 - PES	6 A DRS2366	, 241	5 For	· B ou	tput at m	in <sup>-1</sup>	
	1400	88,0 - 90,0	1420	800	80,0 - 83,0			2800	

1400 1400 1325 1325 1325 1250	88,0 - 90,0 84,0 - 86,0 90,5 - 92,5 87,5 - 89,5 82,5 - 84,5 87,0 - 89,0	1420 1420 1340 1340 1340 1270	800 800 850 800 800	80,0 - 83,0 66,0 - 69,0 88,5 - 90,5 82,5 - 85,5 67,5 - 70,5 84,5 - 87,5	142 PS 168 PS 160 PS	n = 2800 n = 2800 n = 2650 n = 2650 n = 2650 n = 2500
1250 1250 1200 1200 1200 1165	83,0 - 85,0 81,0 - 83,0 86,0 - 88,0 78,0 - 80,0 84,0 - 86,0	1270 1270 1220 1220 1180	800 800 800 800 800	77,5 - 80,5 75,5 - 77,5 84,5 - 87,5 68,0 - 71,0 84,5 - 87,5	140 PS	n = 2500 n = 2500 n = 2400 n = 2400 n = 2330
1150 1150 1100 1075 1075	83,5 - 85,5 8(3,0 - 82,0 82,0 - 84,0 82,0 - 84,0 78,0 - 80,0	1165 1165 1115 1090 1090	800 800 800 800 800	84,5 - 87,5 79,0 + 81,0 84,5 - 87,5 84,5 - 87,5 76,0 - 79,0	142 PS 147 PS 144 PS	n = 2300 n = 2300 n = 2200 n = 2150 n = 2150
1050 1000 1000 900 875	76,5 - 78,5 82,5 - 84,5 77,0 - 79,0 82,0 - 84,0 68,0 - 70,0	1065 1015 1015 910 885	800 800 800 800 800	73,5 - 76,5 84,5 - 87,5 79,5 - 82,5 84,5 - 87,5 66,0 - 69,0	130 PS 137 PS 130 PS 125 PS 106 PS	n = 2100 n = 2000 n = 2000 n = 1800 n = 1750
750 750	85,0 - 87,0 78,0 - 80,0	760 760	-	-	105 PS /	/ n = 1500 / n = 1500

## PLEASE NOTE

- 1. \*\* With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0.3 - 1.0 before the stop.
- 2. LDA adjustment to be carried out according to VDT-W-420/305.
- 3. Dimension H = 22.5 mm = basic setting of LDA.

Checking values in brackets

\* 1 mm less control rod travel than col 2

## **Test Specifications** 2 Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 6,1 b 3. Edition

supersedes RO 275/1400 AB 798 D RQ 275/1400 AB /98 U EP/RS 325/1400 AOB 675D, 699D company KHD EP/RSV..661D, 673D, 686D, 720D BF 6 L 913 F 6 L 913\*\* PES 6 A 85 D 410/3 RS 2366 RS 2415 PES 6 A 80 D 410/3 RS 2348\*\*

Test RS governor according to WPP 001/4, KHD 1 c

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1.9 + 0.1

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 8,5 £ cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 190 strokes 4	Control rod travel mm 2	Fuel delivery  6,0 Ø  cm²//20 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,1 - 4,5	0,4	9	3,1 - 3,5	
	6	0,6 - 1,4		6	0,1 - 0,6	
200	9	1,4 - 2,2		9	0,6 - 1,3	
				_		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQ 275/1400 AB 798 D

Checkin PRG che		Full-load s	•	•	cifications (4)	Idle speed regulation Setting point   Test specifications (			cifications (5)	Torque control  3		
rev/min	Control rod travel mm 2	rev/min 3	Control red travel rnm 4	Central red travel rom 5	rev/min	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travet mm 10	rev/min	Control rod travel mm 12	
1300	13,7-14,3	1300	14,0	1420 1460 1530 1620	13,6-14,0 9,6-13,0 0 - 9 0		0	100 250 350 540	6,2-8,1 4,8-6,8 3,0-5,2 0	900	15,8-16,0 14,9-15,3 14,0-14,3	

on flyweight assembly dimension a = 0,65

Speed regulation: At

1 mm tess control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor co Test oil tem		Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting for spee	uel delivery d I Control
rev/min	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	ray/min 6	cm <sup>3</sup> /1000 strokes / mm 7
\$.	Seite 3 - 4 !					
(inc	rease by <u>+</u> 1,0 cm	3)				./.

Checking values in brackets

Upper rated s	peed		Intermediate				speed		Stidiog et	eeve travel
Degree of deflection of control		Control rod travel	Degree of deflection of control			Degree of deflection of control		Control rod travel		ontrol travel
lever	rev/min	mm	lever	rev/min	mm	lever	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

#### EP/RSV 325-1400 A 8 B 661 D

ca. 64		16,0			L .	ca.	15	325	7,5	1400	0
1	1400 1460	12,6 4,0	Withou	t auxi	liary spr	ing		100 325	min.19,5 7,9-8,1		0,5-0,7
	1500	8,0 - 9,5 1,2 - 3,2 0,3 - 1,5	with a	uxilia	ry spring			630- 690		500	1,2-1,4

#### EP/RSV 325-1150 A 8 B 673 D

ca. 56 1150 1200 1250	16,0 11,1 5,4	without auxo	<b>A</b>	ca. 21 ng	325 200 325	5,5 19-21 5,2 <b>-</b> 5,8	1 †30 500	0 1,0-1,2
1300 1	7,5-10,4 1,3- 3,6 ),3-1,5	with auxilia	ry spring		500 660	1,4-3,4 0 -1,5		

#### EP/RSV 325-900 A 7 B 686 D, 720 D

ca. 60	900 940 980 960 1000	16,0 11,2 4,8 6,0-9,5 2,6-4,6	ca.26	325 150 325 450 550	6,0 19 - 21 5,7-6,3 1,5-3,7 0 -1,5	ca. 26	325 150 325 380 450	6,0 19 - 21 5,7-6,3 1,5-3,8 0 -1,5	880 400	0,9-1,1
	1080	0,3-1,5	686 D	Lower	rated spee	d 720 <b>9</b>	Low	er rated	speed	

#### EP/RS 325-1400 A 0 B 675 D

		15,8-16,6			325	8,3	1380	0
FHca.58		11,4-12,5 6,1-8,1			400	9,4-10,0 4,3-6,4	1050	0,9-1,1
	1620 1680				500 1000	3,5- 4,0 3,3- 3,9	550	1,2-1,4
	1000	0,0 1,0			1200	2,4- 3,0		
					1500	U		
ì	į							

#### EP/RS 325/1400 A 0 B 699 D

VHca.61	1400	15,8-16,5	-		325	8,3	1380	0
FH max.		11,9-13,3			300	8,4-9,1	1100	0,3-0,5
		7,7- 9,8			400	6,0-6,8		
	1550	2,8-5,8			550	3,5-4,0	600	0,7-0,9
	1620				1350	2,8-3,2		
!					1510	0		
								ļ
								l

## C. Settings for Fuel Injection Pump with Fitted Governor

						<del></del>		
Control	d delivery rod stop temp_40°C (104°F)	Rotational speed limitation	Fuel deliv	very characteristics	idle switchir	fuel delivery ng point cm³/1000 strokes	Intermedi rotational Torque-c travel rev/min	speed
١,	2	3	4	5	6	7	8	1
<u>'</u>		13	<del></del>	<u> </u>	<del> </del>	·	<del></del>	
BF 6	L 913 - PES 6					:put?at mir		•
1400	88,0-90,0	1420	800	80,0-83,0	160	PS / n = 2800	)	
1400		1420	800	66.0-69.0		PS / n = 2800		
				•		•		
1400	83,5-85,5	1420	800	66,0-69,0		PS / n = 2800		
1400	80,5-82,5	1420	800	57,5-60,5	130	PS / n = 2800	)	
1400	•	1420	800	52,0-54,0		PS / n = 2800		
1400	70,5-70,5	1420	800	JE ,0-34 ,0	120	13 / 11 - 2000	,	
1325	87,5-89,5	1340	800	82,5-85,5	160	PS / n = 2650	)	
1325		1340	800	66,0-68,5		PS / n = 2650		
1325	80,0-82,0	1340	800	58,5-61,5	130	PS / n = 2650		
1325		1340	800	52,5-55,5	120	PS / n = 2650	1	
						•		•
1325	72,5-74,5	1340	800	48,5-51,5	110	PS / n = 2650	,	
1250	87,0-89,0	1270	800	84,5-87,5	160	PS / n = 2500	1	
	•					•		
1250		1270	800	76,0-79,0	-	PS / n = 2500		
1250	81,0-83,0	1270	800	69,5-72,5	140	PS / n = 2500		
1250		1270	800	62,5-65,5		PS / n = 2500		
1250	74,5-76,5	1270	800	54,5-57,5	120	PS / n = 2500	,	
1250	72 0 75 0	1270	800	52,0-55,0	115	PS / n = 2500	1	
1250								
1200	86,0-88,0	1220	800	84,5-87,5		PS / n = 2400		
1200	78,0-80,0	1220	800	68,0-71,0	135	PS / n = 2400	)	
1200		1220	800	56,5-59,5		PS / n = 2400		
1165	84,0-86,0	1180	800	84,5-87,5	152	PS / n = 2330	,	
1165	70 0-90 0	1100	800	69,5-72,5	125	PS / n = 2330	1	
1165		1180						
1150	83,5-85,5	1165	800	84,5-87,5		PS / n = 2300		
1150	80,0-82,0	1165	800	72,0-75,0	142	PS / n = 2300	)	
1150		1165	800	66.0-69.0	130	PS / n = 2300	)	
				58,5-61,5		PS / n = 2300		
1150	73,0-75,0	1165	800	30,3-01,3	120	rs / II - 2300	,	
1150	70,5-72,5	1165	800	52,0-54,8	110	PS / n = 2300	)	
1100		1115	800	84,5-87,5		PS / n = 2200		
1100	75,0-77,0	1115	800	65,5-68,5	125	PS / n = 2200	)	
1075		1090	800	84,5-87,5		PS / n = 2150		
		1090	800	76,0-79,0		PS / n = 2150		
1075	78,0-80,0	1030	000	14,0-13,0	130	13 / 11 - 2130	,	
1075	71,0-73,0	1090	800	58,0-61,0	115	PS / n = 2150	)	
-						PS / n = 2100		
1050		1065	800	73,5-76,5		•		
1000	82 <b>,5-84,5</b>	1015	800	84,5-87,5		PS / n = 2000		
1000	77,0-79,0	1015	800	72,0-75,0	130	PS / n = 2000	)	
1000		1015	800	69,5-72,5		PS / n = 2000		
1000	/4,U-/U <sub>9</sub> U	1015	000	03,3 72,3	123	/ 11 - 2000	,	

## C. Settings for Fuel Injection Pump with Fitted Governor

engine po Full load di Control roi Test oil ten	elivery	Rotational speed limitation	Fuel deli	very characteristics	Starting Idle switchir	fuel delivery ig point	Intermedi rotational Torque c	speed
rev/min	cm <sup>1</sup> /1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes	rev/min	mm
<del> </del>	<del> </del>	+3	<del> </del>	<del> </del>	+		+	

BF 6 L 913 - PES 6 A 85 D .. RS 2366, 2415 - F or B output at .. min<sup>-1</sup> - Continued -110 PS / n = 200060,0-63,0 1015 800 1000 68,0-70,0 125 PS / n = 1800910 800 84.5-87.5 900 82,0-84,0 69,5-72,5 112 PS / n = 1800910 800 70,5-72,5 900 95 PS / n = 180054,5-57,5 910 800 59,0-61,0 900 106 PS / n = 175066,0-69,0 875 68,0-70,0 885 800 95 PS / n = 175055,5-58,5 875 885 800 59,0-61,0 105 PS / n = 150085,0-87,0 760 750 100 PS / n = 1500760 750 78,0-80,0 95 PS / n = 150072,0-74,0 760 750 80 PS / n = 150056,0-58,0 760 750 output 1 -BF 6 L 913 -135 PS / n = 23001150 82,0-84,0 1170 110 PS / n = 23001170 1150 72,5-74,5 130 PS / n = 2150 1090 1075 81,0-83,0 105 PS / n = 21501090 1075 70.0-72.0 123 PS / n = 20001000 81,0-83,0 1015 100 PS / n = 20001015 1000 67,5-69,5 112 PS / n = 180078,5-80,5 910 900 90 PS / n = 1800910 61,5-63,5 900 106 PS / n = 175077,0-79,0 885 875 95 PS / n = 1500750 83,5-85,5 760 76 PS / n = 1500760 58,5-60,5 750 - F - Output | -F 6 L 913 - PES 6 A 80 D .. RS 2348 EP/RS 325/1400 A 0 B 699 D 130 PS / n = 2800700 64,5-67,5

54,5-57,5

700

120 PS / n = 2800

1400 69.0-71.0

1400 64,0-66,0

1420

1420

e::]·

## **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1 a 1 3. Edition

PES 6 A 85 D 410/3 RS 2415

RS 325/1325 AOB 691 DL 709 DL supersed4s1.82company KHD

Test RS governor according to WPP 001/4, KHD 1 c

BF6 L 913 110 kW (150 [Ş) 2650 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings
1,9-2,0
Port closing at prestroke (1,85-2,05)
mn

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
t	2	3	4	2	3	6
1325	12,0+0,1	8,7 - 8,8	0,3(0,45)	)		
325	8,2-8,4	1,4 - 2,0	0,2(0,4)			
					1	
				j		
	ł					

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper Degree of deflection of control	rated speed	Control rod travel	Intermediate Degree of deflection of control lever	rated spe	Control rod travel	Degree of deflection of control lever	rev/min	ed Control rod travel mm	3 Tor	que control Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-		325	6,5		12,0+0,1 12,5+0,2
	Х =	7,0						min.16,0 6,4-6,6		12,1+0,2
ca.68	11,0 4,0 1600	1355-1365 1450-1480 0,3-1,7					500	3,4-4,0 370=2,0		

The numbers denote the sequence of the lests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat.				fuel delivery	5a Idle stop	
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1325	0,7 bar 86,5-87,5 (84,5-89,5)	1355-1365*	LDA 500 LDA 800	0 bar 56,0-58,0 (53,5-60,5) 0,7 bar 76,5-78,5 (74,0-81,0)	100	15,0-16,0 mm RW	-	<del>-</del>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **D. Adjustment Test for Manifold Pressure Compensator**

KHD 6,1 a 1 - 2 -

Test at n

5 00

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure ba	Gauge pressure bar	mm (1)
PES 6 ARS 2415	0,27		11,6 - 11,8
+AOB 691 DL +AOB 709 DL		0,70	12,5 - 12,7
		0,37	12, 2 - 12,3
		0	11, 3 - 11,5
<del></del>			

**Gote**:

(1) when n

rev/min and gauge pressure

bar ( maximum full load control rod travel)

## **Test Specifications** Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 6,1 g

3. Edition

Festoil-ISO 4113

PES 6 A 85 D 410/3 RS 2415

RQ 300/1250 AB 935 DL

supersedes company

11.81 **KHD** 

engine

BF 6 L 913 T

96 ·kW bei 2500 min 1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
1,90-2,00
(1.85-2.05)
m

mm (from BDC)

7v1 6

		1,85-2,05)			Zy1. 0	
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,1-11	2 7,9 - 8,1	0,3(0,45)			
360	7,3-7,	0,9-1,5	0,2(0,4)			
				<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin	(1)		_			Idle speed regulation Setting point   Test specifications (5)				Torque control		
rev/min	Control rod travel mm	rev/min 3	Control red travel rnm 4	Control rad travel mm 5	rev/min 6	rev/min 7	Control red travel mm 8	rev/min	Control rod travel mm	rev/min	Control rod (	
775	19,2-20,8	775	20,0	1	1295-1310 1365-1395	300	7,4		nin.8,8 7,3-7,5	1	11,1-11,2 12,2-12,3	
1500	0-1,0						l	1	nax. 1,0 35= 2,0	1	11,9-12,1 11,3-11,6	

Torque-control travel on flyweight assembly dimension a = 0,4

Speed regulation: A1295-1310 min-1

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	ulf-load delivery on overnor control lever est oil temp. 40°C (104°F)		ontrol rod stop	<b>3</b>	Fuel deliv	ery characteristics 3b	Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /~1000 strokes 2	rev 3	v/min	<u>-</u>	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	rad travel cm <sup>3</sup> /1000 strokes / mm 7	
1250	80,0 - 81,0 (78,0 - 83,0)		•		800	69,5 - 72,5 (67,5 - 74,5)	100	19,0-21,0 mm RW	

Checking values in brackets

9.82

**BOSCH** 

## **Test Specifications** Fuel Injection Pumps 1 PP 001/4 KHD 6,1 a 2 and Governors

Edition

RQV 750 A B 1004 L PES 6 A 85 D 410/3 RS 2415

supersedes, 80

companKHD

engine BF 6 L 913

70 kW bei 1500 min

A power output

- 10% above rated output

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC)

Rotational speed		85-2,05) Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
720	11,8-11,9	8,4 - 8,5	0,3(0,45	2		6

Adjust the fuel delivery from each outlet according to the values in [

## Testoil-ISO 4113

## **B.** Governor Settings

Upper rated s	peed	· <u></u> · · · · ·	Intermediate	rated spe	ed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection	rev/min Control	Control rod (a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		ı O
of control	rod travel mm		of control	rev/min	mm (4)	of control	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.25	11,3	760-765 790-800								
		0-1,0				39			<u> </u>	<u></u>

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil te		Rotational-speed (2 Ilmitation intermediate speed		Fuel delivery characteristics (5a) high idle speed (5b)		fuel delivery . 6	Torque-control 5 travel  Control rod travel		
rov/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min		
1	2	3	4	5	6	7	9	9	
720	84,0-85,0 (82,0-87,0)	760-765	*		100	1 <b>19,5</b> ~129,5 bei 19,0 - 21,0 mm RW	]		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(1)

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 6,1 i 4. Edition

PES 6 A 85 D 410/3 RS 2415 Komb.-Nr. 0 400 836 023

RQV 300-1250 AB 1131 L

supersedes

1.83

company: engine:

KHD BF 6 L 913 T

96 kW / 2500min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Senches and Testers

## A. Fuel Injection Putto Settings

Port closing at prestroke

mm (from BDC)

Rotational speed	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>2</sup> / 100 strokes 4	Centrol rod trave/ mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250 300	12,0+0;1 8,4-8,6		0,3(0,45) 0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Uppe: rated	speed	1					Lower rated	speed	Control rod	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min	travel mm 3	rev/min 10	mm 11
max.	1385	15,2-17	,8	-	-	-	ca.17	100	min.10,0	250	0,9-1,1
ca.65	11,0 4,0 1525	1290-13 1415-14 0-1,	45				45u-550		8,4-8,6 05 =2,0		3,9-4,1 5,4-5,6 7,8
					<u> </u>		<b>3a</b>				

 $0.9_{mm}$ Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		limitation intermediate speed	high idle speed (5b) Idle				Torque- travel	Control (5) Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	в	7	8	8
1250	78,0-79,0 (76,0-81,0)	1290-1300*	600	71,5-73,5 (69,0-76,0)	100	105,0-115,0 (102,0-118,0) = 17,4-17,8 mm RW	600	12,0+0,1 12,8+0,1 12,3+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## **Test Specifications Fuel Injection Pumps**

WPP 001/4 KHD 11,3 b

1. Edition

PE 8 A 85 D 410 LS 2418

and Governors

RQ 250/1200 AB 867DL 300/1200 ROV 300-1200 AB 915DL supersedes KHD company F 8 L 413 W (180 PS)

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 ie 45°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9 + 0,1

mm (from BDC)

max. RW

Rotational speed rev/min	Control rod travel mm 2	avel		Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,0 - 5,5	0,4			
	6	1,3 - 2,1				
200	6	0,1 - 0,9				
		•				

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

RQ 250/1200 AB867DL

Checkin	g of slider	Full-load	speed re	gulation		Idle spec	ed regula	ation		Torque o	control
rev/min	Control rod travel mm 2	Setting por rev/min 3	Control rod travel rom 4	Test sper rev/min 5	cifications Control rod travel mm 6	Setting prev/min	Control rod travel rnm	Test spe rev/min 9	cifications Control rod travel mm 10	rev/min	Control rod travel mm
600	15,6-16,4	600	16,0	1240 1270 1300 1370	13,0-13,4 6,5-12,0 0,5-9,0 0	550	0	150 300 400 450	6,4-8,1 3,4-5,7 0 -1,5	750 1000	15,8-16,0 13,4-13,7

Torque-control travel on flyweight assembly dimension a =

0,8

Speed regulation: AC 240 - 1250 =

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting t	Starting fuel delivery			
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1 <b>000</b> strokes			
1200	67,5 - 69,5	600	1000 800	67,0 - 70,0 74,5 - 77,5	100	ca. 15 mm RW			
						./.			

Checking values in brackets

Torque control travel a

1,5

C. Settings for Fuel Injection Pump with Fitted Governor

Full load de Control rod Test oil tem		Rotational speed (20) Ilmitation Intermediate speed	Fuel deliv high idle s	very characteristics (5a) speed (5b)	Starting to the switching to the switching to the start of the switching to the switching t	<u> </u>	Torque- travel	Control rod
rev/min	cm'/1000 strokes	rev/min 48	rev/min	cm 1/1000 strokes	rev/min	cm·/1000 strokes 7	rev/min 8	travel mm 9
1200	67,5 - 69,5	1240-1250	1000 800	67,0 - 70,0 74,5 - 77,5	100	ca. 15 mm RW		
i 						e-over point 250 min <sup>-1</sup>		
						·		<u> </u>

Checking values in brackets

\* 1 mm tess control rod travel than col 2

**B. Governor Settings** 

ner rated st	peed		ļ	Intermediate	rated spe	ed	Lower rated	Speed		Stiding st	eeve travel	Ì
,							Degree of deflection	l	Control rod travel		$\cup$	١
ontrol	rod travel	mm	$\sim$	of control	rev/min	mm (4)	of control    lever	rev/min	mm 3	rev/min	mm	I
		2		4	5	6	7	8	9	10	11	1
	£	<u> </u>						1		<b>j</b>		١
			i					ļ		1		l
						1			•	1	İ	Ì
			İ		ŀ	İ				1		I
							1				Ĭ	١
					l	1					1	1
		! 					(38)				<u> </u>	
	ection ontrol	ection Control control rod travel	ection Control travel ontrol rod travel mm rev/min	ection   Control   travel   mm   rev/min   (2a)	ection Control travel deflection of control of control rev/min (2a)	ection   Control   travel   od effection   od travel   mm   rev/min   (2a)   deffection   of control   rev/min   (2a)   erev/min   erev/min   (2a)   erev/min   erev/	ection   Control   travel   1a   deflection   of control   of control   rev/min   (2a)   lever   rev/min   (4)	ection control of travel of travel of control of control of control of control of control lever rev/min (2a)	control o	Control control on travel mm rev/min 2a)  2 3	Control control rod travel mm rev/min 2a 3 Degree of travel of control rod travel mm rev/min 2a 3 Degree of travel of control lever rev/min 4 Travel of control lever rev/min 7 Rev/min 10 Travel of control lever rev/min 10 Travel rev/min 10 T	Control control or d travel mm rev/min 2a 3 Degree or deflection of control lever rev/min 2 3 rev/min 3 rev/min 3 rev/min 3 rev/min 3 rev/min 10 11

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full load di Control roi Test oil ten	elivery d stop np 40°C (104°F) 2	intermediate speed	Fuel deliv	peed 5b	Starting Idle switching	$\overline{}$	Torque- travel	Control cod
rev/min	cm 1/1000 strakes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	7	rev/min	mm 9
	2	3						
!								
i i						1		
!								<u> </u>

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 8,8 a 2

1. Edition

En

PES 4 A 95 D 410 RS 2424

RSV 300-900 A7B 616 DL

supersede 5

company TAM

F4L413R

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,75,1,85 (1,70-1,90)

mm (from BDC,RW 10,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque-control valve)
rev/min	mm 2	cm <sup>-/</sup> 100 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm:/100 strokes	mm 6
900	8,8-8,9	7,6-7,8	0,3 (0,6)			
300	5,9-6,1	0,7-1,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [

## **B.** Governor Settings

Degree of deflection	r rated speed Control rod travel	Interme	intermediate rated speed				rated speed Control rod travel	Torque control Control rod travel		
of control tever 1	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	9	10	11
loose	800	0,3-1,0	-	-	•	ca.27	300	5,5	900	8,8-8,9
	Χ =	5,5					100 300	min. 19,0	600 400	9,4-9,6 9,8-9,9
ca.58	7.8	940-950					435-49	5 = 2,0	100	3,0 3,3
28	100	945-975 0,3-1,7					600	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull load stop	Rotational speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	IControl rod		
Test oil t rev/min	emp 40°C (104°F) cm <sup>-/</sup> 1000 strokes 2	Note changed to ) rev/min 3	rev/min 4	cm <sup>-/</sup> 1000 strokes 5	rev/min	cm·/1000 strokes 7	rev/min 8	travel mm	
900	75,5-77,5	940-950*	-	-	100	115,0-125, = 12,5-13, mm RW		-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

## Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 8,8 a 3

1. Edition

PES 4 A 95 D 410 RS 2424

RQ 275/1200 AB 865 DL

supersedes -

company. TAM

F4L413R

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1.70-1.90)

mm (from BDC) RW 10.5

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,0-9,1	7,6-7,8	0,3 (0,6)			
275	5,9-6,1	0,7-1,3	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checking PRG che rev/min 1	Control rod travel	Full-load : Setting po rev/min 3			rev/min	Idle spec Setting p rev/min 7	coint Central red travel		cifications Control rod travel mm	rev/min	Control (3) Control rod travel mm
600	15,6-16,4	600	16,0	8,0 4,0 1450	1245-1260 1300-1330 0 - 1,0		6,0	100 275 370- 500	min. 7,5 5,9-6,1 10 = 2,0 max. 1,0	1200 950 700	9,0-9,1 9,2-9,5 9,6-9,7
on flywei	ontrol travel ght assembly dimer		0,35	mm	•	ed regula	tion: At	_	60 min <sup>-1</sup>		1 mm less control rod trave

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	2	Control rod stop 3a	Fuel deliv	ery characteristics	$\alpha$	Starting f Idle spee	uel delivery d Control
rev/min	cm <sup>3</sup> /-1000 strokes 2		rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes / mm 7
1200	75,5-77,5 (73,5-79,5)		700	1000 700	74,5-77,5 (72,5-79,5) 75,5-79,5 (73,5-81,5)		100	115,0-125,0 = 13,7-14,3

Checking values in brackets

11.82

**BOSCH** 

Testoil-ISO 4113

WPP 001/4 KHD 8,8 a 1

1. Edition

PES 4 A 95 D 410 RS 2424

RQ 300/1250 AB 1133 L

4 L 413 FR 94 kW (128 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250 300 750 500	9,7-9,8 5,9-6,1 10,1+0,2	0,9 - 1,5	0,3 (0,6) 0,3 (0,5) 0,4 (0,7)	1		

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checking PRG che		Full-load s Setting po		_	cifications (4)	Idle spec	_		cifications (5)	Torque d	(3)
rev/min	Control rod travel mm 2		Control red travel rnen 4	Centrel red travel rnm 5	rev/min	rev/min 7	Central rad travel rnm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod Control
600	15,6-16,4	600	16,0	8,7 4,0 1450	1290-1300 1350-1380 0-1,0		6,0	300 390-4	5,9-6,1	1250 600 830 895	9,7-9,8 10,1-10,2 9,9-10,1 9,7-10,0
	ontrol travel		0,2					1290-	1300 min	1	1 mm less contro

on flyweight assembly dimension a =

## C. Settings for Fuel Injection Pump with Fitted Governor

	delivery on control lever mp. 40°C (104°F)	Control rod stop	3	Fuel delive	ery characteristics 3b	Starting f	fuel delivery 6
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min		rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
1250	89,5 - 91,5 (87,5 - 93,5)	•		750	89, 5 - 92, 5 (87, 5 - 94, 5)	100	119,0 - 129,0 bei 14,0-14,6 mm RW
				500	81,0 - 84,0 (79,0 - 86,0)		

Checking values in brackets

**Testoil-ISO 4113** 

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 12,7 o 1. Edition

PE 8 A 95 D 410 LS 2447

RO 300/1250 AB 1125 L

supersedes

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 0 -45 -90 -135 -180 -225 -270 -315°±0,50° (0,75°) company: engine:

KHD BF 8 L 413 F 221 kW /

2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1.80-1.90)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,0	11,0 - 11,2	0,3(0,6)			
300	6,2-6,3	1,1 - 2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkir PRG chi	ng of slider ack	1		ull-load speed regulation etting point   Test specifications (4				ed regula point		cifications (5)			
rev/min	Control re travel mm	od C	rev/min 3	Control rad travel mm 4	Control red travel rnm 5	rev/min	rev/min 7	Control rod travel rnm 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod travel	
650	19,2-	20,8	650	20,0	10,0	1295-1310	300	6,2	100	min.7,7	1250	11,0-11,1	
					4,0	1325-1355			300	6,2-6,3	1055	11,1-11,4	
			VH c	a.49°					500	max.1,0	975	11,3-11,5	
									380-	420=2,0	650	11,4-11,5	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	letivery on control lever mp. 40°C (104°F)	Control rod stop 3	Fuel deliv	ery characteristics	Starting f	uel delivery d I Control	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm	
LDA 1250	0,7 bar 109,5-111,5 (107,5-113,5)	500	LDA 500 LDA 900	0 bar 67,0-70,0 (65,0-72,0) 0,7 bar 115,0-118,0 (113,0-120,0)	100	130,0-140,0 / 14,7-15,1 mmRW	

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

KHD 12,7 o

1		-
ł	3	ł
	-	ł
1	-	ı
I	4	ł
I	4	1
I		I
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ı	(J)	I
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Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2447 with 1125 L	0,7	0,37 0,15 0	11,4 - 11,5 11,1 - 11,2 9,7 - 9,9 9,3 - 9,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 15.8 i

1. Edition

PE 10A 95D 610/4LS 2448

ROV 300-1250 AB 1105L

supersedet company: KHD

1-10-9 -4- 3 - 6 - 5 -8 - 7 - 2  $0-27-72-99-144-171-216-243-288-315 \pm 0,50^{\circ} (\stackrel{1}{=}0,75^{\circ})$ 

BF 10L 413 F 294 kW (400 PS) bei 2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(1,75-1,95)
Port closing at prestroke
1,80-1,90

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,3-11,	4 11, 4- 11,6	0,3(0,6			
300	6,1-6,3	1,1 - 1,7	0,3(0,5			

Adjust the fuel delivery from each outlet according to the values in [

Testoil-ISO 4113

## **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	4		Lower rated	speed		Sliding s	leeve travel
deflection	rev/min Controt rod travel mm 2	Control rod travel mm rev/min 3	(9) (28)	of control	rev/min 5	Control r travel mm 6	•• <b>•</b>	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3 9	rev/min 10	mm 11
max.	1300	15,2-17	,8	-	-	-		ca. 13	300	min. 7,7 6,1-6,3 735 = 2,0	600	0,5-0,8 2,9-3,2 4,8-5,1 7,6
ca. 65	10,3 4,0 1500	1360-13	90					320-400 ③				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro		Rotational-speed 2b timitation intermediate speed	Fuel delin high idle s	very characteristics (5e)	Starting Idle switching	, •	Torque- travei	Control (5)
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm +0,1
LDA 1250	0,8 bar 113,5-115,5 (111,5-117,5)	1290-1300*	LDA 900 LDA 1100 LDA 500	0,8 bar 119,0-122,0 0,8 bar 116,0-121,0 0 bar 68,0- 71,0	100-	129,0-139,0 220 (80-240) 24 V Elec	1250 1100 900 troma	11,5 11,6

Checking values in brackets

\* 1 mm less control rod travel than col 2

Checking values P. 2

## D. Adjustment Test for Manifold Pressure Compensator

KHD 15,8 i

Test at n =

รกก

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2448 with 1105 L	0,8 bar		11,6 - 11,7
		0,565	11,0 - 11,1
		0,430	10,1 - 10,3
		0	9,3 - 9,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

#### Checking values

900 1/min 0,8 bar (117,0 - 124,0)

1100 1/min 0,8 bar (114,0 - 123,0)

500 1/min 0 bar (66,0 - 73,0)

## **Test Specifications** Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 1 e 1

1. Edition

PE 10 A 95 D 610/4 LS 2448

PE 12 A 95 D 610 LS 2449

RQ 300/1250 AB 1082 L

RQV 300/525-750 Ab 1063 L

supersedes

companyKHD

engine BF 10 L413F (259kW-352PS)

BF12 L 413F

(215kW-292PS)

KHD 1e See note

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,5-10,6	10,2 - 10,4	0,3(0,6)			
300	5,9-6,1	0,7 - 1,3	0,3(0,5)	)		
500/900	-	C, 4-5	0,4(0,7)	)		
		·				

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_

**B. Governor Settings** 

Checkin	Checking of slider Full-load speed re			gulation		Total Speed to gottation				Torque control		
PRG che	PRG check		Setting point   Test s		st specifications (4)		Setting point		Test specifications (5)		3	
rev/min	Control rod travel mm	rev/min 3	Contrel red travel mm	Central red travel rnm 5	rev/min	rev/min 7	Control red travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm	
600	19,2-20,8	600	20,0	9,5	1295-1310	300	6,0	100	mind.7,5	1250	10,5-10,6	
		VII o	.49	4,0	1325-1355			300	5,9-6,1	500	11,3-11,4	
						Ì		500	max. 1,0	1010	11,0-11,2	
	ļ					<u> </u>				1130	10,6-10,9	

Torque-control travel

Speed regulation: At

1 mm less control rod travel

## on flyweight assembly dimension $\boldsymbol{a}=0.3$ C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting f	uel delivery d 1 Control
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
LDA 1250	0,5 bar 100,5 - 102,5 ( 98,5 - 104,5)		L7A 900	0,5 bar 109,0 - 112,0 (107,0 - 114,0)	100	129,0 - 139,0 24V.)
			LDA 500	0 bar 64,0 - 67,0 (62,0 - 69,0)		Electromagnet

Checking values in brackets

Upper rated	Upper rated speed			Intermediate rated speed			speed	Stidings	Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3		0
ca.68	750 950	15,2-17,8 0-1	ca.49	10,0	565-575 620-680	ca.11	100 300	min.7,5 5,7-5,9	250 400	0,3-1,2 1,9-2,1
ca.65	10,0	790-800 805-835					530-	590= 2,0	600 760	3,7-4,5 8,3
						<b>3</b> a)	315-	340		

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Control-rod stop		Rotational-speed 2b Ilmitation intermediate speed	characteristics high idle speed		Starting Idle switching	fuel delivery 6	Torque-control 5 travel Control ro	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min 4	cin <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
LDA 750	0,5 bar 103,5-105,5 (101,5-107,5)	790-800*	LDA 500	0 bar 64,5-68,5 (62,5-68,5)	100 24	129,0-139,0 -Electromagn		

Checking values in brackets

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\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminstron Control rod travel difference		
	Gauge pressure = bar	Gauge pressure = bar	mm		
2448 with 1082 L	·0,290	0,330 0	10,6-10,7 11,0-11,1 9,3-9,4		
2449 with 1063 L	0,500	0,280 0	11,0-11,1 10,8-10,9 9,1-9,2		

En

Festoil-ISO 4113

Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 19,0 f 1. Edition

PE 12 A 95 D 610 LS 2449

ROV 300-1150 AB 1105 L

supersedes \_

engine:

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

company: KHD

0 -15 -60 -75 -120-135-180-195-240-255-300-315° ±0,5°(0,75°)

BF 12 L 413 F 335 kW (455 PS) / 2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	11,3-11,5	0,3(0,25)			
300	6,4-6,6	1,1-1,7	0,7(0,25)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed	•	Stiding s	leeve travel
deflection of control	rev/min Control rod travel mm	Qontrol rod travel mm rev/min	(1) (2)	Degree of deflection of control lever	rev/min	Control rod travel mm 4		rev/min	Control rod travel mm 3	rev/min	mm
1	2	3		-	3	-	<u> </u>	<del></del>	•	-	
max.	1150	15,2-17	,8	- '	-	-	ca.12		min.8,0 6,4-6,6		0,6-0,8 2,9-3,2
											4,9-5,2
ca.65	10,3	1190-12								1150	8,3
1	4,0	1255-12					345-415				
	1375	0-1,	0				39	L			

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten		Rotational-speed (20) limitation intermediate speed	Fuel dein high idle s	very characteristics 5a peed 5b	Starting Idle switchir	_	Torque- travei	Control (5)	
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1150	0,7 bar 112,5-114,5 (110,5-116,5)	1190-1200*	LDA 900 LDA 500	0,7 bar 119,0-122,0 (118,0-123,0 0 bar 68,0-71,0 ( 66,0-73,0		129,0-139,0			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

KHD 19,0 f

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE12ALS2449	0,7		11,8 - 11,9
with AB 1105 L		0	9,5 - 9,6
		0,48	11,6 - 11,7
		0,20	9,9 - 10,3

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

0

Festoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 19,0 g

En

PE 12 A 95 D 610LS 2449

RQV 300-1250 AB 1105 L

supersed 9.82 company KHD BF 12 L 413 F engine. 353 kW / 2500 min

Komb.-Nr. 0 400 640 109

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 120 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315 0 - 5 0 - 5

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rad travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,3	11,4 - 11,6	0,2(0,25			
300	+ U, 5,9-6,1	0,9- 1,5	0,7(0,9)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed	4	Sliding s	leeve travel
deflection	rev/min Control rod travel mm 2	travel	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3		0
max.	1250	15,2-17,8				ca. 12	100 300	min. 7,5 5,9-6,1		0,3-1,3 2,7-3,2 4,5-5,0
ca. 66		1290-1300 1360-1390 0-1,0				325-410			1250	
			l	1		<b>③</b>			<u> </u>	

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-rod Test oil ten	d stop	limitation intermediate speed	high idle s	very characteristics (5a)	Starting Idle switchir	. •	Torque- travel	Control Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm 9+0,1
LDA 1250	0,7bar 113,5-115,5 (111,5-117,5)	1290-1300*	LDA 900 LDA 500	0,7 bar 118,0 - 121,0 (116,0 - 123,0 0 bar 69,0- 71,0 (67,0- 73,0)	100-2	130,0-140,0 20 (80-240)	1250 1100 900	11,3 11,6 11,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.83

BOSCH

# D. Adjustment Test for Manifold Pressure Compensator

KHD 19,0 g -2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Setting	Measurement	diminution Control rod travel- difference
Gauge pressure = bar	Gauge pressure = bar	mm (1) .
0,7		11,6 - 11,7
	0,45	11,5 - 11,6
	0,20	10,0 - 10,2
_	0	9,4 - 9,5
		·
	Gauge pressure = bar	Gauge pressure = bar Gauge pressure = bar  0,7  0,45  0,20

Notes

(1) when n ?

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# ② Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 9,6 d

1. Edition

PE 6 A 95 D 410 LS 2450

1 - 6 - 5 - 4 - 3 - 2

RQ 750 AB 1041 L

supersedes

company:

KHD F 6 L 413

engine:

85 kW (116 PS)

/ 1500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

0 -75 -120-195-240-315° ±0,5° (±0,75°)

ort closing at prestroke

95~2,15 00\_2 10) mm (from BDC)

-ort closning at press		(2.00-2.10)		<del></del>	<del></del>	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,5	8,0-8,2	0,3(0,6)			
300	5,9-6,1	0,9-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

PRG che	Control rod	Full-load s Setting po	centrol red travel	Test spec Control red travel	$\sim$	tdle spec Setting p	Control rod travel	Test spe	cifications 5		Control rod (3)
rev/min	mm	rev/min	mm	mm	Leathin	- CANTONIA			1		
1	2	3	4	5	6	7	8	9	10	11	12
				8,5 4,0 850	750-755 772-785 0-1						

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor o Test oil ten	elivery on ontrol lever np. 40°C (104°F)	2	Control rod stop 3a	Fuel delive	ery characteristics	<b>3b</b>	Starting for idle spee	Control
rev/min	cm <sup>3</sup> /-1000 strokes		rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm 7
700	79,5-81,5 (77,5-83,5)						778	120,0-130,0 bei 13,8-14,2 mm RW 3,9-4,1 mm RW rsion 4(6)

Checking values in brackets

9.82

BOSCH

schaftsbereich KH. Kundendienst. Kf2-Ausrüstung. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany primé en République Fédérale d'Allemagne par Robert Bosch GmbH. **Festoil-ISO 4113** 

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 9,6 f

1. Edition

PE 6 A 95 D 410 LS 2450

1 - 6 - 5 - 4 - 3 - 2

ROV 300-1150 AB 1044 DL

supersedes

company:

KHD F6 L413 FW

115 kW (156 PS)

2300 min<sup>-1</sup>

 $0 - 75 - 120 - 195 - 240 - 315^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(1,95-2,15)
Port closing at prestroke
2,00-2,10

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,1-9,2	8,0-8,2	0,3(0,6)			<u> </u>
300 800	5,9-6,1 	0,9-1,5 C, col.4-5	0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

# B. Governo: Settings

Upper rated a	rev/min	Control rod (18)	Intermediate Degree of deflection	rated sp	control rod	Lower rated Degree of deflection	sp <del>ee</del> d	Control rod	Sliding sleeve travel		
deflection of control lever	Control rod travel mm	travel n.71 rev/min 28	of control	rev/min 5	mm 4	of control lever 7	rev/min 8	mm 3 9	rev/min 10	mm 11	
ca.68	1150 1350	15,2-17,8 0-1	-	-	-	ca.11	100 300 610-	min.7,5 5,9-6,1 670=2,0	300 550	1,5-1,7 3,0-3,2	
ca.64	8,1 4,0	1190-1200 1225-1255				320-440 ③					

Torque control travel a =

0,5 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel delivinghidle s	rery characteristics 5e peed 5b	Starting idle switchir	_	Torque- travel	Control roc
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	78,0-81,0 (76,0-83,0)	100	119-129	850	9,1-9,2 9,3-9,4 9,5-9,6
					100-2	200(80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 KHD 9,6 e

1. Edition

PE 6 A 95 D 410 LS 2450

1 - 6 - 5 - 4 - 3 - 2

RQV 300-800/1250 AB 1045 DL

supersedes

company:

KHD

engine

F 6 L 413 F 141 kW (192 PŞ) 2500 min<sup>-1</sup>

0 -75 -120-195-240-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.00-2.10)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,9	9,3-9,5	0,3(0,6)			
300 1000/700	5,9-6,1 	0,9-1,5 C, col.4-5	0,3(0,5) 0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated	speed	•	Intermediate	rated sp	1	Lower rated	speed	f	Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11	
ca.50	1290 1500	15,2-17,8 0-1	ca.36	8,9 4,0	895-905 955-985	ca.14	100 300 365-	min.7,5 5,9-6,1 425= 2,0		1,4-1,6 4,0-4,3 - 1250	
ca.42	8,9 4,0	1290-1300 1345-1375				330-450 ③	500	0-1	1290	7,4-7,6 7,7	

0,5 mmTorque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel deli- high idle s	very characteristics (58)	Starting Idle switchir	. 0	Torque- travel	Control (5) Control roc
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	
1250	91,5-93,5 (89,5-95,5)	1290-1300*	1000 700	91,0-94,0 (89,0-96,0) 91,5-94,5 (89,5-96,5)	100	14-15 mm RW	900 800	9,9-10,0 9,9-10,2 10,2-10,4 10,4-10,5
				1 1 1	100-	<b> </b> 220 (80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 KHD 9.6 h

1. Edition

PE 6 A 95 D 410 LS 2450

RO 300/1250 AB 1046 DL

supersedes company:

1 - 6 - 5 - 4 - 3 - 2

F 6 L 413 F engine:

KHD

0 -75 -120-195-240-315° ±0,5° (±0,75°)

(1) 130 kW (176 PS) 2500 min<sup>-1</sup>

(2) 141 kW (192 PŞ) 2500 min-Y

(3) 120 kW (163 PS) / 2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers A. Fuel Injection Pump Settings

Port closing at prestroke

1,95-2,15 (2.00-2.10)

3:#aaaaa	Captralead	Fuel delivery
ım (from BDC)		

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,5-9,6	8,5-8,8	0,3(0,6)			
300	5,9-6,1	0,9-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

PRG che	g of slider ck 1 Control rod travel mm	Setting po	speed regulation oint Test specifications Control Control red travel red travel mm rev/min 4 5 6			Idle speed regulation  Setting point Control rev/min   mm   rev/min   7   8   9   10				Control rod travel mm 12		
600	15,6-16,4	600	16,0	8,5 4,0	1295-1310 1335-1365	300	6,0	300 350- 450	min.7,5 5,9-6,1 390= 2,0 max.1,0	1250 1080 965 600	9,5-9,6 9,6-9,9 9,9-10,1 10,1-10,2	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor c	Full-load delivery on povernor control lever (est oil temp. 40°C (104°F)		Control rod stop 3a	Fuel deliv	<b>3</b> b	Starting fuel delivery Idle speed I Con		
rev/min	cm <sup>3</sup> /-1000 strokes		rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
1250	85,0-87,5 (83,0-89,5)		600 -	1000 700	85,0-88,0 (83,0-90,0 86,5-89,5 (84,5-91,5)		100	120,0-130,0

Checking values in brackets

B. Governor S	etting	gs							(2) K	ни 9,6 n _	
Checking of slider  PRG check  Control rod travel  rev/min mm  1 2  600 15,6-16,4	Full foad Setting p rev'min 3 600	-	Test spe Control rod travel mm	rev/min 6 1295-131 1340-137	Setting rev/min 7 300	Control red travel mm	rev/min	10	965	Control rod 1 Travel	).
! Torque control travel	i	0.3	1.	1			1 295 <b>- 1</b> :	310 min 1	1	i mm less contro rod trave	

on flyweight assembly dimension a

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40 C (104 F)	<b>2</b> \	Control rod stop	Fuel deliv	ery characteristics	J-7:	Starting fi Idle spee	uel delivery	1
rev/min	cm / 1000 strokes		rev/min 3	rev/min	cm '/ - 1000 strokes 5		rev/min	od travel cm 1/1000 strokes / mm 7	
( <sup>2</sup> ) 1250	91,5-93,5 (89,5-95,5)		600	1000	91,0-94,0 (89,0-96,0)		100	120,0-130,0	
	:		; ;	700	91,5-94,5 (89,5-96,5)				
			:		· •		!	1	

Checking values in brackets

# Testoil-ISO 4113

# **B.** Governor Settings

Checkin PRG che		Full load Setting p			cifications (4)	Idle sper	oint		cifications (5)	Torque (	(3)
rev min 1 600	Control rod travel mm 12 15.6-16.4	rev/min 3 600	Control rod travel mm	Control rod travel mm 5 8.0 4.0	rev/min 6 1295-1310 1320-1350		8	rev/min 9 100 300	10 min.7.5 5.9-6.1	•	9.0-9.1 9,1-9.4
		:	:			1	t :	350-3 450 r	390 =2,0 max. 1.0	965 600	9,4-9,6 9,6-9,7
Totaue c	ontrol travel	į	0,3		<u> </u>	-	1	<u> </u> 295-1:	310 min <sup>-1</sup>	1	1 mm tess contro

# C. Settings for Fuel Injection Pump with Fitted Governor

Full load d governor o Test oil ten	elivery on control lever np 40°C (104 F)	Control rod stop (3a)	Fuel deli	very characteristics	36)	Starting I	Contro
rev/min	-cm <sup>-7</sup> -1000 strokes -2	rev/min 3	rev/min	cm <sup>1</sup> /- 1000 strokes 5		rev/min	cm*/1000 strokes / mm
: (3) 1250	81,5-83,5 (79,5-85,5)	600	1000	77,5-81,5 (75,5-83,5) 78,5-82,5 (76,5-84,5)		100	120,0-130.0

En Checking values in brackets

# **Test Specifications** 2 Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 9.6 c

1. Edition

PE 6 A 95 D 410 LS 2450

RO 300/1150 AB 1074 L

supersedes

1 - 6 - 5 - 4 - 3 - 2

company:

KHD F 6 L 413 F

engine

130 kW (176 PS)

0 -75-120-195-240-315° ±0,5° (±0,75°)

2300 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1.95-2.15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,0+0,	8,9-9,1	0,3(0,6)			_
300 1020 700	5,9-6, 10,0+0,3 10,5+0,	0,9-1,4 C, col.4-5	0,3(0,5)	Į,		
		1				

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

PRG che	ck Control rod travel	Full-load s Setting po rev/min 3		Test spec Control red travel	rev/min	Idle spet Setting p rev/min 7	Control red travel	Test spe	cifications 5 Control rod travel	rev/min	Control rod (3)
600	15,6-16,4	600	16,0	9,0 4,0 1325	1195-1210 1225-1255 0 - 1,0	300	6,0		5,9-6,1 385=2,0mm	550 870	10,0-10,1 10,5-10,6 10,3-10,5 10,0-10,3

Torque-control travel on flyweight assembly dimension a = 0,3

Speed regulation: At

1195-1210 min-1

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d	elivery on control lever np. 40°C (104°F)	2	Control rod stop 3a		Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strokes		rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min	cm <sup>3</sup> /1000 strokes / mm 7	
1150	87,5-89,5 (85,5-91,5)		600		700 1020 400	88,0-91,0 (86,0-93,0) 88,0-91,0 (86,0-93,0) max.84,5 (max.86,5)		100	119,0-129,0 / 14,0-14,4 mm RW	

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 9,6 1

1. Edition

PE 6 A 95 D 410 LS 2450

RQV 300-1250 AB 1085 L

supersede# companyTAM

Komb.-Nr. 0 400 646 269

engine F6L 413 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	10,3+0,1	9,2-9,4	0,3(0,6)			
300	7,1-7,3	1,8-2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [

# B. Governor Settings

deflection	rev/min Control rod travel mm	Control rod travel mm (28)	Intermediate Degree of deflection of control lever	rated sp rev/min 5	Control rod travel	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel	Sliding s rev/min 10	mm
max. ca. 64	9,3 4,0 1500	15,2-17,8 1290-1300 1370-1400 0 - 1,0	-	•	-	ca.12			580	0,2-0,5 4,3-4,5 5,8-5,9 9,1

Torque control travel = 0.4

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  2 rev/min   cm³/1000 strokes		Rotational-speed (2b) Fuel delivery characteristics (5a high idle speed (5b) rev/min (cm²/1000 strokes		Starting Idle switchin	. •	Torque travel	Control 5  Control root travel mm	
1	2	3 _	4	5	6	7	8	9
1250	91,5-93,5 (89,5-95,5)	1290-1300 *	700 1000	(89,5-96,5)	100	116,5-126,5	250 700 835 1010	10,3+0, 10,7+0, 10,6+0, 10,3+0,

Checking values in brackets

\* 1 mm less control rod travel than col 2

Testoil-ISO 4113

WPP 001/4 KHD 12,7 g

1. Edition

PE 8 A 95 D 410 LS 2451

RQV 750 AB 1041 L

V /50 AB 1041 L

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 0 -45 -90 -135-180-225-270-315 ±0,5° (±0,75°) supersedes \_

company: KHD

engine: F 8 L 413 F

(1) 114 kW / 1500 min<sup>-1</sup>

(2) 129 kW / 1500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,95-2,15

mm (from BDC)

	3	4	2	[3	16
,5	8,1-8,3	0,3(0,6)			
,5-6,7	1,3-1,9	0,3(0,5)			]
-					

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated	ĭ	la				Lower rated speed  Degree of Control rod			Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min	travel	deflection of control lever	rev/min 8	travel	rev/min 10	(1) mm
ca.22	8,5 4,5	750-755 770-790					٠			
						<b>3</b>				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-rod Test oil ten		Rotational-speed 2b timitation intermediate speed	Fuel deli- high idle :	very characteristics 56 speed 50	Starting Idie switchin	<u> </u>	Torque-control 5 travel  Control rod		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travei mm	
1	2	3	4	5	6	7	8	9	
700	79,5-81,5 (77,5-83,5)				100	119 - 129			
700	93,5-95,5 (91,5-97,5)			·					
					100	-650 (80-670)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.82

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(1)

(2)

# Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 f

.. -

PE 8 A 95 D 410 LS 2451

ROV 1150 AB 1041 L

supersedes

company: engine: KHD

F 8 L 413 F 165 kW /

2300 min-1 B-power output

मंद्री test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel injection Pump Settings

Port closing at prestroke

/1 05-2 15

mm (from BDC)

Port closing at pres	TOKE	(1,95-2,15)	min (nom 6DC)		· · · · · · · · · · · · · · · · · · ·	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1100	10,0+0,1	8,7-8,9	0,3(0,6)			
300	5,9-6,1	0,9-1,4	0,3(0,5)			·

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed	1	Sliding s	leeve travel
	rev/min Control	Control rod	<b>(18)</b>	Degree of deflection		Control rod travel	Degree of deflection	ł	Control rod travel		0
of control	rod travel		(2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
_	9,0	1150-11	55	•	-	-	-	-	-		
ļ	4,5	1185-11	95						•		
[ 1	1250	0 - 1	,0								
Ì						 	<u> </u>	<u> </u>			

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delivery characteristics 5e high idle speed 5b		Starting Idle switchin		Torque-control (travel	
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	85,5-87,5	-	-	-	100	110,0-120,0		
	(83,5-89,5)					•		
•								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

Festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 12.7 1 2. Edition

PE 8 A 95 D 410 LS 2451

ROV 300-1150 AB 1044 DL

supersedes 9,82

Komb.-Nr. 0 400 648 116

company: KHD

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

F 8 L 413 FW engino:

0 -45 -90 -135-180-225-270-315° ±0.5° (±0.75°)

153 kW (208 PS) 2300 min-1

Tunnelling or mining vehicles

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

			2	3	6
,1-9,2	7,9-8,1	0,3(0,6)			]
,9-6,1	0,9-1,5	0,3(0,5)			
-					

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod (a) travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	rev/min	(1)
lever 1	mm 2	rev/min (2a)	lever 4	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3)	10	11
max.	1150	15,2-17,8	-		-	ca.11		min.7,5 5,9-6,1	1	1,4-1,6 4,0-4,3
ca.64	8,1 4,0	1190-1200 1225-1255				320 <b>-</b> 400	750	500 =2,0 0-1	1190	8,5
	1350	0-1,0 **				<b>3</b>				

Torque control travel a =

\*\* Set control-rod stop to contact at 600 min/1

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de	stop	limitation	Fuel deliv	very characteristics 5a poed (5b)	idle	•	Torque- trevei	control (5)
rev/min cm³/1000 strokes		rev/min	1	cm <sup>3</sup> /1000 strokes	switchli rev/min	cm <sup>3</sup> /1000 strokes	rev/min	1 .
1	2	3	4	5	6	7	8	9
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	77,5-81,0 (76,0-83,0)	100	119 - 129	350	9,1-9,2 9,4-9,6 9,5-9,6
					100·	-220 (80-240)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Festoil-ISO 4113

WPP 001/4 KHD 12,7 m

1. Edition

PE 8 A 95 D 410 LS 2451

ROV 300-800/1250 AB 1045 DL

supersedes

company:

KHD

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 0 -45 -90-135-180-225-270-315° ±0,5° (±0,75°)

F 8 L 413 F engine. 188 kW (256 PS)

/ 2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm³/100 strokes	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,9	9,2-9,4	0,3(0,6)			
300	5,9-6,1	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Stiding s	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min 10	mm 11
ca.50	1290 1500	15,2-17,8 0-1	ca.26	8,5 4,0	695-705 765-795	ca.14	100 300	min.7,5 6,9-6,1	300 700 1050-	1,4-1,6 4,0-4,3
ca. 42		1290-1300 1345-1375				330-450 3a			1290	7,4-7,6 7,7

0,5 mm Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delin high idle s	rery characteristics 5a peec 5b	Starting Idle switching	•	Torque-control (stravel	
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes 7	rev/min 8	travel mm 9
1250	91,5-93,5 (91,5-94,5)	1290-1300*	1000 700	(89,0-96,0)	100 100-	119-129 -220 (80-240)	i	9,9-10,0 10,2-10,4 10,4-10,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

WPP 001/4 KHD 12,7 k

1. Edition

En

PE 8 A 95 D 410 LS 2451

RQ 300/1075 AB 1046 DL

supersedes company:

engine

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

0 -45 -90-135-180-225-270-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,95-2,15 (2 00-2 10`

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	9.2-9.3	8.3-8.5	0,3(0,6)			
300	5,9-6,1	0,9-1,4	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Checking PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	•	rev/min	Idle spec Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm		Control rod (3)
600	15,6-16,4	600	16,0		1120-1135 1180-1210	300	6,0	100 300 350 - 450	min.7,5 5,9-6,1 390=2,0 max.1,0	1075 950 800 600	9,2-9,3 9,2-9,5 9,6-9,8 9,8-9,9

Torque-control travel on flyweight assembly dimension a =

0,3

Speed regulation: At

1120-1135 min-1

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3	Fuel deliv	ery characteristics	Starting f	uel delivery d Control
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5 .	rev/min 6	rad travel cm <sup>3</sup> /1000 strokes:/ mm
1075	83,5-85,5 (81,5-87,5)	600	1000	83,0-86,0 (81,0-88,0)	100	116,5-126,5
			700	84,5-87,5 (82,5-89,5)		
			400	max. 84,5 (max. 86,5)		

Checking values in brackets

9.82

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**Festoil-ISO 41** 

# Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 12,7 i

1. Edition

PE 8 A 95 D 410 LS 2451

RQ 300/1150 AB 1074 L

KHD supersedes

company:

F 8 L 413 F 173 kW (235 PS)

engine:

2300 min<sup>-1</sup>

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je  $45^{\circ}$   $\pm 0.5$  ( $\pm 0.75^{\circ}$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,3-9,4	8,6-8,8	0,3(0,6)			
300	5,9-6,1	1,4-2,4	0,3(0,5)			
					<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	Test spec Control rad travel	rev/min	Idle spec Setting p rev/min 7	Control red travel	Test spe	cifications 5 Control rod travel mm		Control rod (3) travel mm
600	15,6-16,4	600	16,0		1195-1210 1120-1250 0-1,0	300	6,0	100 300 350- 450	min.7,5 5,9-6,1 390=2,0 max.1,0	1150 550 875 1000	9,3-9,4 9,7-9,8 9,6-9,8 9,3-9,6

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d governor d Test oil ten	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d   Centrel
rev/min t	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ men 7
1150	86,0-88,0 (84,0-90,0)	600	100 700 400	86,5-89,5 (84,5-91,5) 86,5-89,5 (84,5-91,5) max. 84,5 (max. 86,5)	100	116,5-126,5

Checking values in brackets

9.82

BOSC

Testoil-ISO 4113

WPP 001/4 KHD 12,7 h

1. Edition

PE 8 A 95 D 410 LS 2451

RQV 300-1250 AB 1085 L

supersedes

KHD

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

company: engine:

F 8 L 413 F 188 kW (256 PŞ) / 2500 min<sup>-1</sup>

0 -45 -90 -135-180-225-270-315 ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1250	10,3	9,2-9,4	0,3(0,6)			
300	7,1-7,3	1,8-2,4	0,3(0,5)			
	·	,				
					<u> </u>	

Adjust the fuel delivery from each outlet according to the values in [

0,4mm

# **B.** Governor Settings

Upper rated s	peed		Intermedia	te rated sp	1	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	trave:	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
ca.68	1250 1500	15,2-17,0 0 - 1	8 -	-	-	ca.12		min.8,7 7,1-7,3 515 =2,0	300 650 1290	0,7-0,9 4,6-4,8 8,4
ca.64	9,3 4,0	1290-130 1370-140				<b>3a</b>				

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten	atop	Rotational-speed (2b) limitation intermediate speed	Fuel deliv	ery characteristics 5e peed 50	Starting Idle switchin		Torque- travel	Control 5  Control root travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8		
1250	91,5-93,5 (89,5-95,5)	1290-1300*	1000 700	(89,0-96,0)	100 100-	119-129 220 (80-240)	700 400	10,3-10,4 10,7-10,8 10,7-10,8	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.82

Geschaftsbereich KH, Kundendienst, Ktz-Ausrüstung, C by Robert Basch GmbH, D-7 Stuttgart 1, Postfach 50, Printed in the Federal Republic of Germany, Imprime en République Fedérale d'Allemagne par Robert Bosch GmbH.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 e 1. Edition

\_\_\_\_

PE 8 A 95 D 410 LS 2451

RQV 300-1150 AB 1096 L

supersedes company: KHD

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

0 -45 -90 -135-180-225-270-315 ±0,5° (±0,75°)

engine: F 8 L 413 F 159 kW (216 PS) / 2300 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

ort closing at prestroke

1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,5-9,7	8,3-8,5	0,3(0,6)			_
300	6,4-6,6	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	of control	rev/min	Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding s rev/min 10	mm
	1150 1350	15,2-17,8 0 - 1				ca.14	100 300	min.7,5 6,4-6,6		1,2 2,4-2,6 8,5
ca.64	8,6 4,0	1190-1200 1230-1260				330-400 ③				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		limitation intermediate speed	Fuel delivery characteristics 5e high ide speed 50		Starting idle switchir	• •	Torque- travel	control 5  Control rod travel
rev/min	cm³/1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm . n a
1	2	3	4	5	6	7	8	9+0,2
1150	82,5-84,5 (80,5-86,5)		1000 400	90,5-93,5 (88,5-95,5) max.86,5 (max.88,5)	100		1150 1125 1000 400	9,6 9,7 10,4 10,4
					100-220 (80-240)			

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. C by Robert Bosch GmbH, C-7 Shittgert 1, Postfach 50. Printed in the Federal Republic of Germany Imprimé en République Fédéralo d'Allemagne par Robert Bosch GmbH.

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

 $\odot$ 

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 l 2. Edition

PE 10 A 95 D 610/4 LS 2452 Komb.-Nr. C 400 649 196

ROV 750 AB 996 L

combau/KHD snberseqéal ° 85

engine: F10L413F

142 kW/1500 min<sup>-1</sup>(1) 162 kW/1500 min<sup>-1</sup>(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pres	troke /1	2,0-2,1   95-2-15)	mm (from BDC)	mm (from BDC)							
Rotational speed rev/min	Control rod travel mm (	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6					
710	9,5-9,6	8,0-8,2	0,3 (0,6)								
300	5,6-5,8	0,4-0,9	0,3 (0,5)								

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated s	peed			Intermediate rated speed			Lower rated	speed	Sliding sleeve travel		
deflection	rod travel	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	0
max.	760	15,2-17,	8.	-	-	•	-	-	-	-	-
ca.27	9,0 4,0	750-755 770-785					<b>3</b>				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		F) 2 intermediate speed		Fuel delivery characteristics (5e) high ide speed (5b)		fuel delivery 6	Torque-control 5 travel  Control ro travel	
rev/min	cm <sup>3</sup> /1000 strokes	rgermin 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
710 (1) 750 (2)	79,5-81,5 (77,5-83,5) 93,5-95,5 (91,5-97,5)	750-755*	-	-	100	min.116,5 = 13,9-14,3 mm RW	-	<b>-</b>

Checking values in brackets

in ram less control rod travel than col. 2

5.84

BOSCH

Testoil-ISO 4113

WPP 001/4 KHD 15,8 d 1

2. Edition

supersedes

company:

KHD F 10 L 413 F

11.82

engine:

235 kW (320 PS)

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2 0 -27 -72 -99 -144-171-216-243-288-315° ±0.5° (±0.75°)

All test specifications are void for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,0-2,1 Port closing at prestroke (1,95-2,15) mm (from BDC)

PE 10 A 95 D 610/4 LS 2452

Komb.-Nr. 0 400 649 201

Rotational speed rev/min		Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	9,1-9,3	0,3(0,6)			
300	6,8-7,0	1,4-2,0	0,3(0,5)			

ROV 300-1250 AB 1026 DL

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Upper rated	i 1	1	Intermediat	e rated sp	1	Lower rated	speed	Control rod	Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2	of control	rev/min 5	control rad travel mm 4	Degree of deflection of control lever	rev/min 8	mm 3	rev/min 10	mm 11	
max.	1295	15,2-17,	3 -	-	-	ca.12	100 300	min.7,5 5,9-6,1		0,5-0,8 2,8-3,1	
ca.66	9,3 4,0 1500	1290-1300 1340-1370 0 - 1,0				330-400	550-	680= 2,0 max. 1,0		4,6-4,9 7,6	
				]		<b>3</b>					

0,4 mm Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros		Rotational-speed (25) limitation intermediate speed	Fuel deliv	ery characteristics 5e peed 50	Starting Idle switchin		Torque- travel	control 6 Control rod
rev/min		rev/min 49	rev/min cm³/1000 strokes 4 5		rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm
1250	91,0-93,0 (89,0-95,0)	1290-1300*	1000 700	(88,5-95,5)	100	14,3-15,3 mm RW	1000 700	10,3+0,1 10,3+0,2 10,7+0,1 10,7+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 KHD 15,8 c 1. Edition

PE 10 A 95 D 6 10/4 LS 2452

ROV 300-1150 AB 1047 DL

supersedes

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

KHD company:

F 10 L 413 FW

0 -27 -72 -99 -144-171-216-243-288-315° ±0,5° (±0,75°)

192 kW (261 PS) / 2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control vaive) mm 6
1150	9,1	7,9-8,1	0,3(0,6)			
300	5,9-6,1	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor Settings

deflection	rev/min Control rod trave mm	Control rod (a travel mm (2a 2a 3	of control	rated sp rev/min 5	Control rod travel mm 4		rev/min	Control rod travel mm 3	Sliding s rev/min 10	mm
ca.68		15,2-17,8 0 - 1	-	-	-	ca.11	300	min.7,5 5,9-6,1 -600=2,0	300 750 1190	1,4-1,6 4,0-4,3 8,5
ca.64	8,1 4,0	1190-1200 1225-1255				325-400 ③				

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten	d stop	Rotational-speed 20 limitation intermediate speed	Fuel deliv	very characteristics (5a)	Starting idle switching		Torque- travei	Control (5) Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 44)	rev/min	cm <sup>3</sup> /1000 st <sup></sup> /ws	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	78,0-81,0 (76,0-83,0)	100	120-130	850	9,1-9,2 9,4-9,6 9,5-9,6	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 15,8 c 1 2. Edition

PE 10 A 95 D 610/4 LS 2452

ROV 300-1150 AB 1055 DL

supersed 68 • 83 company: KHD

Komb.-Nr. 0 400 649 210

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2 $0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315^{\circ} + 0,5^{\circ}(+0,75^{\circ})$  engine: F 10 L 413 F 200 kW/2300 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
9,3-9,4	8,4 - 8,6	0,3(0,6)			
5,9-6,1	0,9 - 1,5	0,3(0,5)			]
	travel mm 2 9,3-9,4	mm cm <sup>3</sup> /100 strokes 2 3 9,3-9,4 8,4 - 8,6	mm cm³/100 strokes 2 100 strokes 4 9,3-9,4 8,4 - 8,6 0,3(0,6)	travel travel cm³/100 strokes cm³/ 100 strokes 2 cm³/ 100 strokes 4 cm³/ 100 strokes 2 cm²/ 100 strokes 2 cm	travel   cm³/100 strokes   cm³/100 strokes   cm³/100 strokes   mm   cm³/100 strokes   2   3   cm³/100 strokes   3   cm³/100 strokes   cm³/

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

deflection of control	rev/min	Control rod travel mm (2a)	Intermediate Degree of deflection of control lever	rated sp	Control rod travel mm 4	Lower rated Degree of deflection of control lever	speed rev/min 8	Control rod travel mm 3	Sliding s	mm
max. ca. 64	8,3 4,0 1350	15,2-17,8 1190-1200 1230-1260 0 - 1,0	-	-	-	ca. 11 320-425 3	100 300	min. 7,5 5,9-6,1	700	1,5-1,8 3,7-4,0 7,2-7,4 9,3

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		limitation intermediate speed	1 1 -,		Starting Idle switchin	. •	Torque-control 5 travel  Control rod travel		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 44	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
1150	83,5-85,5 (81,5-87,5)	1190-1200*	850	92,0-95,0 (90,0-97,0)	100	116,5-126,5 (113,5-129,5)	500 950	9,3-9,4 10,3+0,1 10,0+0,2 9,4-9,7	

Checking values in brackets

\* 1 mm less control rod travel then col. 2

5.84

BOSCH

Festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 d 1. Edition

PE 10 A 95 D 610/4 LS 2452

ROV 300-1250 AB 1083 L

supersedes

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

company:

F 10 L 413 F

0 -27 -72 -99 -144-171-216-243-288-315° ±0,5° (±0,75°)

224 kW (305 PS) 2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2.00-2.10 mm (from BDC)

Rotational speed	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,2	8,9-9,1	0,3(0,6)			
300	6,9-7,1	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	ed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Qontrol rod travel mm rev/min	lacksquare	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1250 1500	15,2-17 0 - 1	,8	-	-	-	ca.13		min.8,5 6,9-7,1 780 =2,0	1	1,5-1,7 2,9-3,2
ca.63	9,2	1290-13 1350-13				·	325-400 ③		· •	1290	8,1

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load C Control-ro Test oil te		Rotational-speed 20 limitation intermediate speed	Fuel deliv	ery characteristics (5a) peed (5b)	Starting idle switching		Torque-control (travel Control r	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1 <b>000 strokes</b> 5	rav/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9+ 0,1
1250	88,5-90,5 (86,5-92,5)	1290-1300*	1000 800	87,5-89,5 (85,5-91,5) 89,5-92,5 (87,5-94,5)	100	116,5-126,5 / 14,3 - 14,7 mm RW	1250 900 800	10,2 10,3 10,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **Test Specifications** 0 Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 h 1. Edition

PE 10 A 95 D 610/4 LS 2452

ROV 300-1150 AB 1086 L

supersedes

KHD company:

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

0 -27 -72 -99 -144-171-216-243-288-315° ±0,5° (±0,75°)

F 10 L 413 F engine: 196 kW (266 PS)

2300 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	2 2	3	6
1150	8,5-8,6	7,8-8,0	0,3(0,6)			_
300	5,9-6,1	1,3-1,9	0,3(0,5)			
i				Ì		

Adjust the fuel delivery from each outlet according to the values in [

**B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed L		Stiding s	eeve travel
Degree of deflection of control lever	rev/min Control rod travel	Control rod travel mm rev/min	(1) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
ca.68	1150 1350	15,2-17 0 - 1	,8	-	-	-	ca.19	100 300 430-	min.7,5 5,9-6,1 490 =2,0	300 750 1190	0,6-0,8 4,0-4,3 8,5
ca.64		1190-12 1220-12					<b>39</b>		· _		

1,0<sub>mm</sub> Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr		timitation intermediate speed	high idle s	very characteristics (56)	Starting Idle switchin		Torque- travel	Control Control rod	
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	ww	
1	2	3	4	5	6	7	8	9	
1150	77,5-79,5 (75,5-81,5)	1190-1200*	800	85,0-88,0 (83,0-90,0)	100	119 - 129	1150 1000 800 400	8,5-8,6 9,1-9,3 9,4-9,5 9,4-9,5	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.02

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 b

1. Edition

مظر

PE 10 A 95 D 610/4 LS 2452 RQV 300-1250 AB 1129 L

1 - 10 - 9 -4 - 3 - 6 - 5 - 8 - 7 - 2

0 - 27 - 72 - 99 -144-171-216-243-288-315° ±0,5° (±0,75°)

supersedes company: KHD F 10 L 413 F 228 kW (310 PS) / 2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke (1.95-2.15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	9,1-9,3	0,3(0,6)			
300	6,4-6,6	1,2-1,6	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Uppe: rated	speed			Intermediate	rated sp	eed	Lower rated	speed	•	Stiding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min	(1) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
max.	1250	15,2-17	7,8	-	-	-	ca.14		min.19,0 6,4-6,6		1,0-1,2 3,4-3,8
ca.44	9,3 4,0 1475	1290-13 1365-13 0 - 1							•		5,4-5,6 8,0
							<u>3</u>			<u> </u>	

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro- Test oil ter		Rotational-speed 20 timitation intermediate speed			Starting Idle switching		Torque-control (5 travel Control ro travel	
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1250	90,5-92,5 (88,5-94,5)	1290-1300*	1000 800	(88,5-95,5)		120,0-130,0	500 800	10,3+0,1 10,5+0,1 10,5+0,1 10,3+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

Geschäftsbereich KH. Kundendienst. Kfz-Auerüstung. C by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany. Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 n 2. Edition

**\_\_\_** 

PE 12 A 95 D 610 LS 2453

RQV 750 AB 996 L

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

0 -15 -60 -75 -120-135-180-195-240-255-300-315° ±0,5°

engine: F 12 L 413 F

,75° Komb.-Nr.0 400 640 094

supersedes 3.83

company: KHD

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

170 kW/1500 min<sup>-1</sup> (1) 194 kW/1500 min<sup>-1</sup> (2)

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
710	9,5-9,6	8,0-8,2	0,3(0,6)			
300	5,6-5,7	0,4-0,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	l .	Lower rated	speed	Sliding sleeve travel		
Degree of deflection of control lever	rev/min Control rod travel mm 2	CHAG!	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
ca.27	9,0	750-755 770-785	-	-	-	-	-	-	-	-
	İ					<u>3a</u>				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		limitation intermediate speed	Fuel delivery characteristics (5a) high idle apped (5b)		idie switchin		Torque- travel	Control 5  Control red travel
	rev/min 1	cm <sup>3</sup> /1000 strokes ·	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	7	8	9
(1) (2)	750 750	79,5-81,5 (77,5-83,5) 93,5-95,5 (91,5-97,5)	750-755*	-	•	100	120,0-130,0 = 13,8-14,5 mm RW	-	-
		(91,5-97,5)							

Checking values in brackets

 $\circ$  0 , 5 tess control rod travel than  $\cot$  . 2

5.84

115

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 19,0 n 1

1. Edition

PE 12 A 95 D 610 LS 2453 RQV 1150 AB 996 L Komb.-Nr. 0 400 640 096

supersedescompany: KHD

engine. F 12 L 413 F

1-4-9-8-5-2-11-10-3-6-7-12  $0-15-60-75-120-135-180-195-240-255-300-315^{\circ} \stackrel{+}{=}0,5^{\circ} (\stackrel{+}{=}0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pres	troke	2,0 <b>-</b> 2,1 (1.95-2.15)	mm (from BDC)							
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6				
1110	9,3-9,4	8,6-8,8	0,35(0,6							

# **B. Governor Settings**

Upper rated	speed		Intermedial	e rated sp	eed	Lower rated	speed	Sliding s	leeve travel	
Degree of deflection	rev/min Control		Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control	rod travel	rev/min (	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3	rev/min	mm
1	2	3	4	5	6	7	8	8	10	11
ca. 27	8,8 4,0	1150-1155 1175-1190	-	-	-	-	-	-	1075 1150 1200	0,6 4,0 6,7
						<b>3</b>				

Torque control travel a =-

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel delivery characteristics (5e) high ids speed (50)		Starting Idle switching	, •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm²/1000 strokes	:ev/min	travel 而命
1	2	3	4	5	6	7	8	9
1110	85,5-87,5 (83,5-89,5)	1150-1155*	-	<u>-</u>	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

PE 12 A 95 D 610 LS 2453

RQV300-1150 AB 1047 DL

supersedes KHD

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12  $0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315° <math>\pm 0,5°$  ( $\pm 0,75°$ )

company: F12L413FW engine: 230kW(313PS) 5°) / 2300min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

(1,95-2,15)
Port closing at prestroke 2,00-2,10

mm (from BDC)

Rotational speed rev/min	Control rod Gaver mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,1-9,2	7,9-8,1	0,3(0,6)			
300	5,9-6,1	0,9-1,5	0,3(0,5)			
	-					
	j					

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Upper rated and Degree of deflection of control lever	rev/min Control rod trave	Control rod ta travel mm (2a)	Intermediate Degree of deflection of control lever	rated spore	Control rod travel mm 4	Lower rated Degree of deflection of control tever 7	speed rev/min 8	Control re travel mm	3	Sliding s rev/min 10	mm
max.	1150	15,2-17,8	-	-	-	ca.11	100 300 540-6	min.7 5,9-6 00=2,0			1,4-1,6 4,0-4,3 8,5
ca.64	8,1 4,0 1350	1190-1200 1225-1255 0 - 1,0				325-400 3a					

Torque control travel a = 0,5 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel delic high idle s	rery characteristics 58 peed 50	Starting fuel delivery 6 Idle switching point		Torque- travel	Control Control rod
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>2</sup> /1000 strokes	rev/min 8	mm 9
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	78,0-81,0 (76,0-83,0)	100	119-129	850	9,1-9,2 9,4-9,6 9,5-9,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19.0 1 1. Edition

PE 12 A 95 D 610 LS 2453

ROV 300 1150 AB 1056 DL

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

 $0-15-60-75-120-135-180-195-240-255-300-315^{\circ}$  ±0,5 (±0,75°)

KHD company:

BF 12 L 413 FWC 272 kW (370 PS)

/ 2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel injection Pump Settings 2,0-2,1 Port closing at prestroke (1,95-2,15)

:nm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travei	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes [3	mm 6
1150	10,3+0,1	9,1-9,3	0,3(0,6)			
300	6,4-6,6	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated s	peed			Intermediate	rated ap	ed	Lower rated	speed	1	Sliding a	deeve travel
	rev/min Control	Control rod travel	<b>(9)</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		. ①
	rod travel mm	ten/win	<b>(2a)</b>	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	•	4	5	6	7	8	9	10	11
max.	1150	15,2-17	,8	•	•	•	ca.14		min.8,0 6,4-6,6		0,2-0,8 2,8-3,2
ca.66	9,3 4,0	1190-120 1240-127						300	0,4 0,0		4,7-5,0 7,9
! !	1350	0 - 1	,0				310-380				
							<b>3</b>				

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 20 ilmitation intermediate speed	Fuel delh high idle s	rery characteristics 5e peed 50	Starting Idle switchir	•	Torque- travel	-control 5 Control rod
rev/min	cm³/1000 strokes	rev/min	rev/min		rev/min 6	cm³/1000 strokes	rev/min	travel mm
LDA 1150	0,5 bar 90,5-92,5 (88,5-94,5)	1190-1200*	LDA 775 LDA 500	0,32 bar 94,5-98,5 (92,5-100,5) 0 bar max.76,5 (max.78,5)	100	119,0-129,0 / 14,4- 14,6 mm RW	500	10,3+0,1 10,7+0,1 10,7+0,1 10,5+0,2

Checking values in brackets

1 mm less control rad travel then col. 2

10.82



snat. Kfz-Ausrüstung. Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany • d'Allemagne par Robert Bosch GmbH.

# D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

KHD 19,0 1

	Pump/governor	Setting	Measurement	diminution Control rod travel- difference
		Gauge pressure = bar	Gauge pressure = bar	mm (1) .
estoil-ISO 4113	PE 12 A LS2453 withAB 1056 DL	0,7	0 0,33 0,28	10,7 - 10,8 10,2 - 10,3 10,6 - 10,7 10,4 - 10,6

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# **Test Specifications** ①

Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 19,0 k

3. Edition

ROV 300-1150 AB 1083 L PE 12A 95D 610 LS 2453 Komb.-Nr. 0 400 640 106

1.83 supersedes KHD

F 12 L 413 F 260 kW(352PS)

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 engi  $0 -15 -60 -75 -120 -135 -180 -195 -240 -255 -300 -315° <math>\pm 0,5°$  ( $\pm 0,75°$ )

/ 2300 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings (1,95-2,15)

Port closing at prestroke

2.00-2.10

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,5-9,6	8,8 - 9,0	0,3(0,6)			1
300	6,4-6,6	1,6 - 2,2	0,3(0,5)			
	I		1	1		

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed		Lower rated	speed				leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min	Control ro travel mm 6	od ①	Degree of deflection of control lever	rev/min	Control re travel mm		rev/min	mm
max.	1150	15,2-17	,8	-	-	-		ca.16	300	min.8	6		1,4-1,6 4,0-4,3
ca.66	8,5 4,0 1400	1190-120 1240-121 0 - 1	70					320-400 3a		700=2,0	)	1190	8,5

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc	stop	Rotational-speed 20 limitation intermediate speed	Fuel deliv	rery characteristics (5a) speed (5b)	Starting fuel delivery (6) idle switching point		Torque-control (5 travel Control re		
		rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9	
1150	87,5-89,5 (85,5-91,5)	1190-1200*	700 1000	88,0-91,0 (86,0-93,0) 87,0-90,0 (85,0-92,0)		125,0-135,0 (122,0-138,0) = 14,3-14,7 mm RW	945 800 700	9,5-9,6 9,5-9,8 9,8-10,0 9,9-10,0	
					100-	220 (80-240)			

Checking values in brackets

\* 1 mm less control rod travel then col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 i
1. Edition

En

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,0-2,1
Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,7-8,8	8,2 - 8,4	0,3(0,6)			
300	5,9-6,1	1,3 - 1,9	0,7(0,9)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated	speed	_		Intermediate	rated sp	eed	Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	( <u>u</u> )	Degree of deflection of control lever	rev/min 5	Control rod travel mm (	•	Degree of deflection of control lever	rev/min	Control rod travel mm 3		mm
<u>'</u>	<del> </del>	3		-	-	-		<del></del>	<del>-</del>		<u> </u>	
max.	1150	15,2-17	,8	•	-	-		ca. 23	100	min. 7,5		0,3-0,5 2,5-2,7
ca. 60	7,7	1190-120 1225-125							300	5,9-6,1	850 150	4,5-4,7 7,8
i	1350	0-1,0	0		l			450-520				ļ
								<b>3</b>	l			l

Torque scriboi savel a = 0,9 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel deliv	rery characteristics 5e peed 5b	Starting Idle switchir	. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel /mm 9
1150	81,5-83,5 (79,5-85,5)	1190-1200*	800	89,0-92,0 (87,0-94,0)	100	120,0-130,0 117,0-133,0)	400 800	8,7-8,8 9,6-9,7 9,6-9,7 9,3-9,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2 3.84 **Testoil-ISO 4113** 

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 m

2. Edition

Er

PE 12 A 95 D 610 LS 2453 KOMD.-Nr. 0 400 640 108

RQV 300-900 AB 1090 L

supersede 3.83 company: KHD

KOMD.=W. 0 400 040 100

engine F 12 L 413 FW

177 kW (240 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from 8D

Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
9,2-9,3	7,2 - 7,4	0,35(0,6)			
5,9-6,1	1,0 - 1,6	0,35(0,55	)		
	mm 2 9,2-9,3	mm cm <sup>3</sup> /100 strokes 2 3  9,2-9,3 7,2 - 7,4	travel mm cm³/100 strokes 2 3 7,2 - 7,4 0,35(0,6)	travel mm cm³/100 strokes 2 3 7,2 - 7,4 0,35(0,6)	travel travel travel travel travel travel (cm <sup>3</sup> /100 strokes 2 3 4 2 3 (mm cm <sup>3</sup> /100 strokes 2 3 (mm cm <sup>3</sup> /100 strokes 2 3 (mm cm <sup>3</sup> /100 strokes 2 3 (mm cm <sup>3</sup> /100 strokes 2 3 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2 (mm cm <sup>3</sup> /100 strokes 2

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated		Intermediate	rated sp	eed	Lower rated	speed	Sliding s	Stiding sleeve travel		
Degree of deflection	rev/min	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel	mm rev/min 2s	of control lever	rev/min		of control lever	rev/min	mm ③	rev/min	mm 11
1	2	45 2 47 0	ļ <del></del>	5	6	ca. 24	100	min.7,5		0,5-0,7
max.	925	15,2-17,8	-	] -	-	La. 24		1	1	
ca. 59	7,4	940- 950			}		300	15,9-6,1	470	4,0-5,2
	4,0	980-1010		ł		1	345-4	05 = 2,0	680	6,2-6,5
	1100	0 - 1,0							900	8,2
						<b>3</b> a				

Torque control travel a = 0,8 mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 20 limitation intermediate speed	Fuel delivingh idle s	rery characteristics 56 peed 5b	Starting Idle switchir		Torque-control 5 travel Control rod travel	
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min 8	mm
600	72,0-74,0 (70,0-76,0)	940-950*	750 850	80,5-83,5 (78,0-86,0) 72,5-75,5 (70,0-78,0)	100	19,0-21,0 mm RW ·		8,4+0, 9,2+0, 8,9+0,2 8,5+0,

Checking values in brackets

\* 1 mm less control rod travel than col 2

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 6,1 el 4. Edition

En

PES 6 A 95 D 410 RS 2471 RSV 325-1150A 8 B 674 DL Komb.-Nr. 0 400 876 275

supersedes company engine 9.82 KHD BF 6 L 913 C 132 kW / 2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,85-2,05) 1,90-2,00

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>4</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1150	11,8+0,1	10,8-11,0	0,3(0,6)			
325	7,2-7,4	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	hate rated	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control   Control rod travel   mm
loose	800 x =	0,3-1,0 4,75	-	-	-	ca.15	325 100	6,8 min.19	500	11,8+0,1
ca.55	1235-12	00=10,8 65= 4,0 3 - 1,7					325 615-675	7,2-7,4 = 2,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp 40°C (104°F)	Rotational- speed limitat. Note: changed to .)	speed limitat Characteristics			Starting fuel delivery 5   4a Idle stop   Control rod   travel			
rev/min	cm³/1000 strokes	rev/min 😽	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	mm 9	
LDA 1150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*	LDA 850 LDA	0,7 bar 102,5-105,5 (100,5-107,5) 0 bar 62,0-64,0 (59,5-66,5)	100	120,0-130,0 = 15,9 - 16,4mm RW	325	6,8	

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.83



J23

# D. Adjustment Test for Manifold Pressure Compensator

KHD 6.1 e 1 - 2 -

500	rev/min decreasing pressure - in	bar gauge pressure	
	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure bar	Gauge pressure - bar	mm (1)
674 DL	0,7 bar		11,8 - 11,9
		0	10,6 - 10,7
		0,27	11,6 - 11,7
	·	0,1	10,8 - 11,0
		Setting Gauge pressure bar	Setting Measurement Gauge pressure bar Gauge pressure bar  0,7 bar 0,27

Notes

(1) when n

rev/min and gauge pressure

bar ( maximum full load control rod travel)

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 6,1 e 7. Edition

En

PES 6 A 95 D 410 RS 2471 Komb.-Nr. 0 400 876 274

RSV 325-1150 A 8 B 707 DL

supersedes 6.83 KHD

engine BF 6 L 913 C

Combination 2300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

1,9-2,0 (1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1150	11,8+0,1	10,8-11,0	0,3(0,6)			_
325	7,1-7,3	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	r rated spee Control rod travel mm	d rev/min   Control rod   travel   mm rev/min	Interme	diate rate	d speed	Control- lever deflection in degrees 7	rev/min	rated speed  Control rod  travel  mm  9	rev/min	rque control  Control rod  travel  mm   11
loose	800 x =	0,3-1,0 4,75	-	-	-	ca.21	325 100 325	6,7 min.19,0 7,1-7,3	1	11,8-11,9 11,8-12,0
ca.55	10,8 4,0 1400	1190-1200 1235-1265 0,3-1,7					590-65			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	Rotational- speed limitat	11.34	uel delivery naracteristics	Starting t	uel delivery 5	4a Idle stop		
Test oil to rev/min 1	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm	
LDA 1150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*	LDA 850 LDA 500	0,7 bar 102,5-105,5 (100,0-108,0) 0 bar 62,0-64,0 (59,5-66,5)	100	125,0-135,0 (122,0-138,0) = 15,5 - 15,8 mmRW		-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. i 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

## D. Adjustment Test for Manifold Pressure Compensator

- 2 -KHD 6,1 e

Test at n

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
PES 6 ARS 2471 + RSVA 8 B707DL	0,70	0,37 0,09 0	11,8-11,9 11,5-11,6 10,1-10,3 9,9-10,1
	1	l	<u> </u>

Notes

(1) when n

rev/min and gauge pressure = bar ( - maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 8,5 c

2. Ediction

PE 6 A 85 D 410 LS 2472

RQ 300/1200 AB 867 D RQV 300-1200 AB 915 D ./.

supersedes K H D company F 6 L 413 W

Cam sequence and angular com spacing

1-6-5-4-3-2-1

0 - 75 - 120 - 195 - 240 - 315 - 360°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1.9 + 0.1

mm (from BDCbei max. RW

t t			cm'/	į	l .	(torque-control valve)
ev/min	mm	cm 1/100 strokes	100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
	2	3	4	2	3	6
1000	9	5.0 - 5.5				
	6	1,3 - 2,1				
200	9	3,9-4,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

RQ ... 867 D

Checkin	g of slider	Full-load	speed re	gulation		idle spe	ed regula	ation		Torque o	control
		Setting p	oint	Test spe	cifications	Setting p	point	Test spe	cifications		
rev/min 1	Control rod travel mm 2	rev/min	Control rod travel rmm 4	rev/min 5	Control rod travel mm 6	rev/min 7	Control rod travel mm 8	rev/min	Control rod travel mm 10	rev/min	Control rod travel mm 12
600	15,7-16,3	600	16,0	1230 1270	,	1	0	200	6,9-8,1 5,6-7,7	650 800	15,8-16,0 14,6-15,1
				1300 1370				350 450	1,8-4,2 0	920	13,6-14,0

Torque control travet on flyweight assembly dimension a

0,75 <sub>mm</sub>

Speed regulation 1240 - 1255

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

		<u> </u>	•		· · · <del>-</del> ·		
governor	lelivery on control lever mp 40°C (104 F)	Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery		
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm 1/- 1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7	
1200	67,5 - 69,5	800	1000 800	67,0 - 70,0 74,5 - 77,5	100	ca. 15 mm RW	
						./.	

Checking values in brackets

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed	ı	Sliding sl	eeve travel
Degree of deflection of control lever	rev/min Control i rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	① mm 11
ca. 66	1255 1300 1400 1500	15,0-18,0 11,0-15,0 0,5- 8,0		-	1	ca. 10	100 300 450 600 820	7,0-8,0 4,6-6,2 2,7-4,4 1,5-3,0	1255 1250 600	0
						(3a)				

Torque control travel a - 1,5 mi

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (2b) limitation intermediate speed	character high idle :	ristics	idie	fuel delivery 6	Torque- travel	Control 5  Control rod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm '/1000 strokes 7 •	rev/min 8	mm 9
1200	67,5 - 69,5	1240 - 1250*	1000 800	67,0 - 70,0 74,5 - 77,5	100	ca. 15mmRW		
					chan 180-	ge-over point 250 U/min		

Checking values in brackets

\* 1 mm less control rod travel than co: 2

### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

rev/min decreasing pressure - in bar gauge pressure increasing

	Pump/governor	Setting	Measurement	diminution Control rod travel- difference
Ì		Gauge pressure = bar	Gauge pressure = bar	mm
		<u> </u>		<u> </u>

En

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 19,0 c

1. Edition

<u>n\_\_</u>

PE 12 A 95 D 520 RS2475

ROV 300-1150 AB932DR

supersedes company K H D

engine BF 12 L 714 (340 PS)

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,4 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,0	0,4			
	6	3,4 - 4,2	1			
200	6	0,6 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed	•	Intermediate	rated sp	eed	Lower rated	speed	•		eeve travel
Degree of deflection of control lever	rev/min	Control rod travel mm 3	Degree of deflection of control lever	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever	rev/min 8	Control rod travel mm 9	rev/min	ontrol travel
ca.68	1150 1180 1220	13,0-16,5 9,0-14,0 3,4-10,0	-	-	-	ca.10	100 300 400	6,8-8,0 4,8-7,0 3,0-5,2	200 1150	0,3-1,0 8,8
	1260 1320	0-6,0					500 750	2,2-3,8	1130 500	0 0,8-1,0

Torque control travel a

(1,9 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed limitation	Fuel deliv	very characteristics	Starting Idle switchin	fuel delivery ng point	Intermed rotationa Torque- travel	Ispeed
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	mm
LDA 1150	0,65 bar 95,5 - 97,5	1190-1200*	LDA 1000 600 LDA 500	0,65 bar 105,5-107,5 99,5-103,5 0 bar 80,5-82,5	Chang 18	e-over point 0-250 min <sup>-1</sup>		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

KHD 19,0 c

-2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
2475 with 932DR	0,68	0,28	Full load-RW - 0,2

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 4,1 c 1 1. Edition

En

PES 4 A 80 D 410/3 RS 2523 Komb.-Nr. 0 400 864 044

RSV 325-1400 A 8 B 540DL

supersed?s Company KHD F 4 L 912 engine Einbau 2800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)

mm (from BDC)

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•		
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770		#

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve
ev/min	mm (2)	cm1/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm:/100 strakes	mm
1	2	3	4	2	3	6
1380	10,2+0,1	5,7-5,8	0,2(0,35)			
325	8,0-8,2	0,9-1,5	0,2(0,3)			
•						:

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	er rated speed	d rev/min	Interm	ediate rat	ed speed	(4)	Low	er rated speed	I( 3 /	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel rnm
loose	800 x=	0,3-1,0	-	•	•	ca.19	325 100	7,6 min.19,5	1380 900	10,2-10,3 10,8-11,1
ca.67	9,2 4,0 1600	1420-1430 1450-1480 0.3 - 1.7					325 670 -	8,0-8,2 730 =2,0	500	11,4-11,5

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Rotational- speed limitat		uel delivery naracteristics	Starting I	uel delivery 5	<b>43</b> ld	e stop
Test oil te rev/min 1	emp 40°C (104°F) cm·/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm <sup>-/</sup> 1000 strokes 5	rev/min	cm½1000 strokes 7	rev/min 8	travel mm
1380	57,0-58,0 (55,5-59,5)	1420-1430*	-		-	~ <u>.</u>	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.84

**BOSCH** 

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## **Test Specifications** Fuel injection Pumps (A) and Governors

WPP 001/4 KHD 4,1 c 2

2. Edition

En

supersedes 1.83

Road-building machine 59 kW/2500 min

PES 4 A 80 D 410/3 RS 2523 RSV 325-1250 A 8 B 540-1 L Komb.-Nr. 0 400 864 058

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>-/</sup> 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1250	11,6+0,1	6,9-7,0	0,25(0,4)			
325	8,2-8,4	1,0-1,6	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed		Interme	ediate ra	ted speed	4		rated speed	(3) 10	rque control
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- tever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose		0,3-1,0 4,0	-	•	<b>-</b>	ca.17	325 100	6.5 min.19,5		11,6-11,7
ca.56	10,6 4,0 1555	1290-1300 1390-1420 0,3-1,7					325 630-69	6,9-7,1 D = 2,0	965	11,8-12,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational speed limitat		uel delivery naracteristics	Starting I	luel delivery 5	49 10	e stop
rev/min	emp 40°C (104°F) cm*/1000 strokes 2	Note changed to 1 rev/min 3	rev/min	cm:/1000 strokes	rev/min	cm·/1000 strokes 7	rev/min 8	Control root travel mm
1250	68,5-69,5 (67,0-71,0)	1290-1300*	800	64,5-66,5 (62,5-68,5)	-	•	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.84

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## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 4,1 c 1. Edition

En

PES4A80D410/3RS2523

RS325/1400A0B699DL -

supersedes

company engine

KHD F4L913

64 kW / 2800min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,90-2,00 (1,85-2,05)

mm (from BDC)

estoil-ISO 4113

Rotational speed rev/min 1	travel cm²/		Control rod travel mm 2	Fuel delivery  cm <sup>4</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm	
1400	12,0+0,1	6,8 - 6,9	0,2(0,35)			
325	8,4-8,6	0,9 - 1,5	0,2(0,3)			
	:					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed		Intermed	diate rated	speed	(4)	Lower	rated speed	1(3)	rque controi
Degree of deflection	Control rod travel	travel				Control- lever		Control rod travel		Control rod travel
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	10	11
loose	800	0,3 - 1,0				VHva.55	325	8,5	1400	12,0-12,1
	x =	5,25				FHca.25	100	min.11,0	1090	12,2-12,5
VHca.55		1450=11,0 1530= 4,0					425-455	=5,5	550	12,8-12,9
EH max.	1560-0	7,3 - 1,7					180-230			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	oll-load stop emp 40°C (104°F)	Rotational speed limitat		nel delivery naracteristics	Starting findle	luel delivery 5	<b>43</b> ldl	e stop   Control rod   travel
rev/min	cm³/1000 strokes 2	changed to 1) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
1400	68,0-69,0 (66,5-70,5)	1440-1450*	800	61,5-63,5 (60,0-65,0)	_	-	325	8,5

Checking values in brackets

\* 1 mm less control rod travel than col 2

## Test Specifications Testoil-ISO 4113 Fuel Injection Pumps H00 001/4 and Governors

1. Edition

KHD 5.1 d

En

supersedes PES 5 A 30 D 410/3 RS2526 (1) EP/RSV 325-1150 A3 B2014DL KHD PES 4 A 30 D 410/3 RS2523 (2) 325-1400 A2 B1022DL engine F5 L912 F4.. (1 - 63kW - 85PS)1 - 3 - 5 - 4 - 2 +0,50

 $0 - 72 - 144 - 216 - 288^{\circ} (+0.75)$ 

(2 - 64kW - 87PS)

All test specifications are valid for Bosch Fuel Injection Fimp Test Benches and Testers

#### A. Fuel Injection Pump Settings

1,90-2,00 Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	1, 85-2, 05) Fuel delivery 2526 cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery 2523 cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8	5,5 - 5,6	0,2(0,35	12,0	6,9 - 7,1	n = 1400
	+0,1			+0,1		
325	9,0-9,2	0,9-1,5	0,2(0,3)	8,9-9,0	0,9 - 1,5	n = 325
775/850		C, 4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

2014DL (1)

Upper	rated speed		Intermediate	rated spe	ed	4 Lower	rated spe	ed	3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever		Control rod travel mm	rev/min	Control rod travel	
1	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,0				ca.21	325	5,0		<u>+</u> 0,1	
10050	X =	4,7					100	min. 19		11,8	
ca.55	10,8	1190-1200 1235-1265	İ				325 390-4 500	5,4-5,6 50 = 2,0 0 - 1	775	12,1 12,7 12,8	
	1350	0,3 - 1,7				<u> </u>					

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	ad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	(5a) Idle stop	
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes		Note: changed to rev/min rev/min		1		cm <sup>1</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	<del>'</del>	18	9
1150	55,5 - 56,5 (54,0 - 58,0)		775	57,0 - 59,0 (55,5 - 60,5)				
							:	
								<u> </u>
	1				ļ			./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

#### 1022DL (2)

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	4 Lowe Degree of deflection of control lever 7	rev/min	Control rod travel mm	3 Tol	cque control Control rod travel mm 11 + 0,
10000	800	0,3-1,0				ca.21	325	5,0	1400	12,0
loose	х	- 4,5					100 325	min. 19 5,4-5,6	035	12,3
ca.58	11,0 4,0 1650	1440-1450 1505-1535 0,3-1,7					525-! 700			13,2

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-I	oad stop	6 Rotational speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	(5a) Idle stop Control rod		
Test oil ten rev/min 1	cm <sup>1</sup> /1000 strokes	Note changed to rev/min 3	rev/min	cm <sup>1</sup> /1 <b>000</b> strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9	
1400	70,0 - 71,0 (68,5 - 72,5)	1440-1450 *	850	61, 5 - 63, 5 (60, 0 - 65, 0)					
			69		:				

Checking values in brackets

### **B. Governor Settings**

1) Upper Degree of deflection of control lever	rated spee	Control rod travel mm	Intermediate Degree of deflection of control lever		ed Control rod travel mm	4 Lowe Degree of deflection of control fever 7	rev/min	ced Control rod travet mm 9	1(-)	Control rod travel mm
				<u> </u>				·		
5										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-f	oad stop	6 Rotational- speed limitat	3a Fu	el delivery aracteristics	Starting (dle	fuel delivery	5a Idle stop		
Test oil ten	np 40°C (104°F) cm³/1000 strokes	Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7		travel mm 9	
<u> </u>	2								
			! 						
							<u> </u>		

Checking values in brackets

\* 1 mm less control rod travel than col 2

<sup>\* 1</sup> mm less control rod travel than col 2

## **Test Specifications Fuel Injection Pumps** and Governors

WPP001/4 KHD 1 g 7 1. Edition

En

PES5A80D410/3RS2526 RSV 325-1200A8B2147L

1-3-5-4-2 je 72  $\pm 0.5$  ( $\pm 0.75$ )

supersedes\_

company KHD

F5L912

65 kW (88 PS)

DX 90-S 22 Tractor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### **IA. Fuel Injection Pump Settings**

mm (from BDC)

or closing at pres	(1	,85-2,05)	(			
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1200	11,5+0,	1 6,0 - 6,1	0,2(0,35			
325	8,9-9,1	0,9 - 1,5	0,2(0,3)			
	İ					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper	rated speed		Intermediate rated speed			4 Lowe	r rated spe	3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travei mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 0	.3-1,0	-	-	-	ca.19	325	8,5	1200	11,5+0,
loose	Ι,	٠, ١					325	8,9-9,1	500	12,1+0,
		= 4,5	ŧ.				465-9	25=2.0	950	11,8+0,
ca. 56	1240-	11250 = 10	5			ł	''' '		1.	'
(5)		1315 = 4,	q							ļ
•	1450	= 0,3-1,7						1	1	İ

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational-speed limitat. 3a Fuel delivery characteristics			Starting Idle	fuel delivery	(5a) Idle stop	
Test oil temp 40°C (104°F) rev/min cm³/1000 strokes t 2		Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min   cm³/1000 stroke 6 7		rev/min 8	Control rod travel mm 9
1200	60,0 - 61,0 (58,5 - 62,5)	1240-1250*	800	58,0 - 59,0 (56,5 - 60,5)	100	19,0-21,0 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K12

①

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 i 1

(5) 89kW (121PS)

(6) 77kW (105PS) (8)85kW (115PS) 2500min

5. Edition

PES 6 A 80 D 410/3 RS 2527 RQV 300-1400 AB 951 DL (1-2) supersed. 82 RS 2348 RQ 300/1400 AB 935 DL (3) companyKHD engine F 6 L 913

page 5.
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

ort closing at prestroke 1,9 - 2,0 mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring/pre-tensioning (torque-control valve) mm 6
1250	12,5+0,1	6,7 - 6,9	0,2(0,35)			
300	8,0-8,2	1,0 - 1,6	0,2(0,3)			}
			İ			

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

.. RS 2527 \_\_\_ RS 2348 m. RQV..AB 951 (1-2)

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed	•	Stiding s	leeve travel
deflection		Control rod travel	/ deflection		Control rod travel	Degree of deflection of control		Control rod travel		0
of control lever	rod travel mm	rev/min (2)	of control lever	rev/min	mm ④	lever	rev/min	mm ③		mm
1	2	3	14	5	6	7	8	18	10	11
max.	1470	15,2-17,8	-	-	-	ca. 12	100	min.7,5	250	0,4-1,0
ca. 65	11,0 4,0 1700	1440-1450 1545-1575 0 - 1.0				410-650		5,9-6,1 590= 2,0	630 1020 1400	2,8-3,5 4,6-5,0 7,6
	1700	0 - 1,0				39				,,,

Torque control travel a = 0.9

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deliv	ery characteristics (56)	Starting Idle switchir	. •	Torque- travel	Control cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1 <b>000 strokes</b> 5	rev/min 6	577.19 <del>77.1171.1</del> 7 7	rev/min 8	travel mm
1400	69,0-70,0 (67,5-71,5)	1440-1450*	700	64,5-66,5 (63,0-68,0)	100	_ , ,	1150	12,0+0,1 12,3+0,3 12,8+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K13

**B.** Governor Settings

- ..RS 2527 u. ..RS 2348 m. RQ 300/1400 AB 935 DL (3)

KHD 1 i 1

-2-Torque control Checking of slider idle speed regulation Full load speed regulation Setting point Test specifications (5)Setting point Test specifications PRG check Control rod Control Control rod Control rod Control rod travel travel travel rod travel red travel travel rev/min mm rev/min rev/min mm rev/min mm rev/min mm mm rev/min mm 10 12 700 19,2-20,8 20,0 11,0 1445-1460 300 8,5 100 min. 10,0 1400 12,0-12,1 700 950 12,5-12,8 300 8,4-8,6 4,0 1540**-**157**0** VH ¢a. 46° 600-640=2,0mm 700 13,0-13,2 1700 0 - 1,0750 max.1,0

Torque control travel on flyweight assembly dimension a

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load governo	delivery on r control lever emp 40°C (104 F)	Control rod stop 3a	<u>.</u>			ig fuel delivery seed Control
O rev/min	cm <sup>-</sup> /-1000 strakes	rev/min 3	rev/min	cm'/-1000 strokes	rev/mi	cm <sup>1</sup> /1000 strokes / mm
Testoil-1S(	69,0 - 70,0 (67,5 - 71,5)		700	64,5-66,5 (63,0-68,0)	-	-

Checking values in brackets

**B. Governor Settings** 

..RS 2527 u. ..RS 2348 m. RQ 300/1325 AB 935 DL (4,7)

Checkin PRG che	g of slider ck Control rod Itravel	Full load: Setting po				ı	Control rod travel	Test spe	cifications 5 Control rod	Torque o	Control rod (3)
rev/min	mm 2	tev/min	mm 4	mm 5	rev/min 6	rev/min 7	mm 8	tev/min	mm   10	11	12
320 VII 6	19,2-20,8 a. 46°	820	20,0	11,5 4,0 1600	1370-1385 1460-1490 0 - 1,0	300	6,0	100 300 500-5 700	5,9-6,1 40 = 2,0	1325 775 875 1000	12,5-12,6 13,6-13,7 13,2-13,4 12,6-12,9

Torque-control travel on flyweight assembly dimension a

Speed regulation At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

•	Full load di governor c	elivery on ontrol lever	Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting fi Idle spee	uel delivery d Control
	rev/min	cm <sup>1</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>1</sup> /-1000 strokes 5	rev/min 6	rod travel cm <sup>3</sup> /1000 strokes / mm 7
	1325	68,5-69,5 (67,0-71,0)	700	775	72,5-75,5 (71,0-77,0)	-	-

En Checking values in brackets

Torque control travel on flyweight assembly dimension a

**B.** Governor Settings

0,4

Speed regulation At 1295-1310 min

1 mm less control rod travel

Control rod

12,5-12,6

13,4-13,6

13,8-13,9

12

#### C. Settings for Fuel Injection Pump with Fitted Governor

	letivery on control lever np 40°C (104 F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f Idle spee	[ Control
rev/min	cm '/- 1000 strokes	rev/min	rev/min	cm <sup>1</sup> /-1000 strokes	rev/min	cm 1/1000 strokes / mm
	2	3	4	5	6	<u></u>
1250	66,5 - 67,5 (65,0 - 69,0)	•	800	64,0 - 66,0 (62,5 - 67,5)	-	-
	]					
}			-			
						1

Checking values in brackets

En Checking values in brackets

Testoil-ISO 4113

**B. Governor Settings** 

..RS 2527 u. ..RS 2348 m. RQ 300/1250 AB 935 DL (6)

-	ontrot travel ght assembly dimer		,65	mm	Sne	ed regula	_	95-13	10 min <sup>-1</sup>	L	t mm tess control rod travel
800 VH c	19,2-20,8 a. 46°	800	20,0	! -	1295-1310 1360-1390	300	8,5	100 300 580-6 750	min.10,0 8,4-8,6 20 = 2,0 max. 1,0	950	11,9-12,0 12,7-12,9 13,5-13,6
Checkini PRG che rev/min 1	Control rod travel	Full-load setting por rev/min 3	•	-	rev/min	Idle spec Setting p rev/min 7	_	Test spe	cifications 5 Control rod travel mm	rev/min	Control rod (3) travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np 40°C (104 F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d Control
rev/min	cm³/-1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min	rod travel cm <sup>3</sup> /1000 strokes / mm 7
1250	58,0 - 60,0 (56,5 - 61,5)	-	700	53,5 - 56,5 (52,0 - 54,0)	-	-

**B. Governor Settings** 

..RS 2527 m. RQ 300/1250 AB 935 DL (8)

Checking of slider Full load speed regulation Idle speed regulation forque control PRG check Setting point Test specifications Setting point Test specifications (5) Control rod Control rod Control rod travel ind travel rod travel rod travel travel travel rev/min rev/min imm rev/min mm rev/min reviroin mm rev/min mm mm mm 2 1250 10,5-10,6 800 19,2-20,8 VH = max. 46 300 8,5 100 | min.9,5 800 20,0 9,5 | 1295-1310 1200 10,7-10,8 300 | 8,4-8,6 4,0 | 1360 - 1390 580-620= 2,0 800 11,4-11,6 500 11,4-11,6

Torque control travel on flyweight assembly dimension a

0,45 mm

Speed regulation Al 295-1310 min

t mm less control rod travel

KHD 1 i 1

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor c	ull load delivery on overnor control lever est oil temp 40°C (104 F)		Control rod stop 3a	fuel deliv	ery characteristics	Starting Idle spe	fuel delivery 6	
ev/min	cm 1/- 1000 strokes		rev/min 3	rev/min	cm <sup>1</sup> /-1000 strokes 5	rev/min	cm 1/1000 strokes / mm	
1250	60,5-62,5 (58,5-64,5)		-	800	58,5-60,5 (57,0-62,0)	-	-	
				500	52,0-54,0 (50,5-55,5)			

Checking values in brackets

#### **B.** Governor Settings

Checking PRG che	g of slider ck (	$\sim$ 1	Full-load s	•	~	cilications (4	Idle spe	-		cifications (5)	Torque control	
	Control rod travel mm		•	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel		Control rod	I .	Control rod travel mm
<b>"</b>					<u></u>	6						
									i i			
				l				L	<u>L</u>	<u> </u>		

Torque-control travel on flyweight assembly dimension a

\_\_\_

Speed regulation At

₫ mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop  3a Fuel delivery		ery characteristics	-11	Control		
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mn		
	2	3		3	-	<del> </del>		
					1			

#### Notes:

With item 2 - PES 6 A 80 D 410/3 RS 2527 and ... RS 2348 with RQV 300-1400 AB 951 DL and item 6 - PES 6 A 80 D 410/3 RS 2527 and ... RS 2348 with RQ 300/1250 AB 935 DL

an engine code no. instead of the engine output is sometimes given by the customer on the engine nameplate.

These engine code nos. 1025, 1032, 1034, 1035 and 0708 require a reduced full-load delivery:

n 
$$1250 = 57,5 - 59.5$$
  $cm_3^3/1000$  strokes n  $850 = 55,5 - 57,5$   $cm_3^3/1000$  strokes.

From engine no. 6 216 324 the following applies:

n 
$$1250 = 63,5-65,5$$
 cm<sup>3</sup>/1000 strokes  
n  $850 = 60,5-62,5$  cm<sup>3</sup>/1000 strokes

This must at all costs be taken into account when new adjustments and control measurements are made.

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 6,1 d

3. Edition

PES 6 A 80 D 410/3 RS2527 EP/RSV 325-1150 A8 B2014DL

3.84 supersedes KHD

Komb.-Nr. 0 400 866 084

company engine

F6 L912 74kW (102PS) 2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,85-2,05)

mm (from BDC)

tractor DX 110-S 31

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8	5,6-5,7	0,2(0,35)			
325	+0,1 8,9-9,1	0,8-1,2	0,2(0,3)			
				<u> </u>	1	

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	(3) To	rque control  Control rod  travel  mm
loose	800	0,3-1,0				ca.23	325 100	8,5 min.19,5	1	11,8+0,1 12,0+0,2
ca.58	10,8 4,0 1350	1190-1200 1235-1265 0,3- 1,7					325 390-450	8,9-9,1 = 2,0	775	12,5+0,2 12,5+0,2

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F)	Rotational- speed limitat Note changed to )			Starting findle	Idle stop Control rod travel		
rev/min	cm³/1000 strakes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	l_	mm
1	2	3	4	5	- 6	7	8	9
1150	56,0-57,0 (54,5-58,5)	1190-1200*	775	54,0-56,0 (52,0-58,0)	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

K18 ...

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 6.1 d 1 1. Edition

PES6A 85 D 410 RS 2537 Komb.-Nr. 0 400 876 270 RSV 325-1150 A8B2020 DL A8C2020 DL

KHD company

engine

BF 6 L 913 97 kW/2300 min<sup>-1</sup> (1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tractor DX145-S15 107kH/2300 min-1 (2)

#### A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-2,05)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-confrol valve)
rev/min	mm (2)	cm /100 strokes	100 strokes	mm	cm /100 strokes	mm
1	2	3	4	2	3	6
1150	11,0+0,1	8,0-8,2	0,3(0,45)			
325	6,8-7,0	1,0-1,6	0,2(0,4)			
	•	,				
		i '			ļ	

Adjust the fuel delivery from each outlet according to the values in  $\Box$ 

#### **B. Governor Settings**

Uppe	er rated speed	rev/min	Interme	diate rated	d speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travet mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-1,0	-	- -	-	ca.21	325 100 325	5.0 min.19,5 5,4- 5,6		
ca.55	10,0 4,0 1350	1190-1200 1225-1255 0,3-1,7					510-570			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) f	ull-load stop	6 Rotational- speed limitat		uel delivery	Starting f	Starting fuel delivery 5 4a Idle stop			
Test oil t rev/min 1	cm <sup>1</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm/1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
LDA 800	0,7 bar 77,0-78,0 (75,0-80,0) 0,5 bar 78,0-81,0 (75,5-82,5)	1190-1200*	LDA 650 LDA 500	0,3 bar 77,0-79,0 (74,5-81,5) 0 bar 61,0-63,0 (58,5-65,5)	100	120,0-130,	0 -	<del>-</del>	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. € 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Alfemagne par Robert Bosch GmbH.

#### **B.** Governor Settings

Upper of Degree of deflection of control lever	rev/min	Control rod travel mm 3	Intermediate Degree of deflection of control fever	rated spe rev/min 5	ed Control rod travel mm 6	Degree of deflection of control lever	rated spe rev/min 8	eed Control rod travel mm		que control Control rod travel mm
loose	800	0,3-1,0				ca.21	325 100 325	4,9-5,1 min19,5 5,4-5,6	750	1,0+0, 2,4+0,2
ca.55	1 .	1190-1200 1225-1255 0,3-1,7					510-5 700		450	12,5+0,2

## C. Settings for Fuel Injection Pump with Fitted Governor

9	2 Full-los	ad stop	Rotational- speed limitation		el delivery tracteristics	Starting Idle	fuel delivery	Sa) Idle	stop
	Test oil temp rev/min 1	2.40°C (104°F) cm³/-1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm
(2)	LDA 1150	0,7 bar 79,5 - 81,5 (77,5 - 83,5)	1190-1200*	LDA 800	0,7 bar 88,0 - 91,0 (86,0 - 93,0) 0 bar 60,0 - 63,0 (58,0 - 65,0)	100	120,0-130, 117,0-133, - 17,4-18, mm. RW	b)	-

Checking values in brackets

Testoil #10 4113

\*1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Pump/governor	Setting		ar gauge pressure (9 p )  Measurement		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	(g p.)	bar	(g p )	bar	mm (1)XX
2537 mit 2020DL	0,70		0,37 0,09 0		12,6 - 12,8 12,2 - 12,3 10,6 - 10,9 10,6 - 10,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 KHD 6,1 f

Edition

PES 6 A 85 D 410 RS2572

Testoil-ISO 4113

RO 300/1325 AB1070DL (1)

ROV 300-1325 AB1072DL (2)

supersedes 9.82 company K H D

BF 6 L 913

118 kW (160 FS)

Komb.-Nr. 0 400 846 440 (1)

0 400 846 444 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Please note instructions on sheet 2

Port closing at prestroke

mm (from BDC)W=9.0 - 12.0 mm

		2,15-2,557				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1325	13,1+0,1	8,9 - 9,0	0,3(0,45			
300	4.9-5.1	1,0 - 1,6	0,2(0,4)	·		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

PRG che	Control rod	Full-load s Setting po rev/min 3	•	Test spec Control red travel	$\sim$	Idle spec Setting p rev/min 7	Control red travel	Test spe	cifications 5 Control rod travel	rev/min	Control rod
855 VH =	19,2-20,8 max. 46°	855	20,0	4,0	1450-1480		6,0	300	min. 7,5 5,9-6,1 545=2,0	-	-
				1550	0 - 1,0			625	0 - 1		

Torque-control travel on flyweight assembly dimension a =

Speed regulation 1370-1385 min -1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	letivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting for the starti	Contrar
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min	fev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strakes/mm 7
LDA 1325	0,7 bar 89,0 - 90,0 (87,0 - 92,0)		LDA 850 LDA 500	0,7 bar 83,0 - 86,0 (80,5 - 88,5) 0 bar 58,0 - 60,0 (55,5 - 62,5)	100	19-21 mm RW <sub>)</sub> 24 V! Electromagnet
						./.

Checking values in brackets

**B.** Governor Settings

**RQV..1072DL** 

Upper rated	speed			Intermediate	rated spe	ed	Lower rated		l	Sliding sleeve tr		
Degree of deflection of control lever	rev/min Control rod travet mm	Control rod travel mm rev/min 3	(1a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm 11	
max.	1325	15,2-17	,8	-	-	-	ca.13	100 300 375-	   min.7,5   5,9-5,1   435 =2,0	300 900	1,4-1,0 4,2-4,4	
ca.47	12,1 4,0 1600	1365-13 1455-14 0 -					(39)	530	0 - 1	1370	8,4	

Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem		~	Fuel deliv character high idle s	istics peed (5b)	idle switchin	ig point	Torque-( travel	Control Control roc
rev/min	cm³/1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm /1000 strokes 7	rev/min 8	mm 9
LDA 1325	0,7 bar 89,0 - 90,0 (87,0 - 92,0)	1365-1375*	LDA 850 LDA 500	0,7 bar 83,0 - 86,0 (80,5 - 88,5) 0 bar 58,0 - 60,0 (55,5 - 62,5)		19-21 mm RW 24 V!) Electromagne	) t	

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than co: 2

## D. Adjustment Test for Manifold Pressure Compensator

Testatn -

rev/min increasing pressure - in bar gauge pressure

Pump/gavernor	Setting	Measurement	diminution Control rod 淋丛後KXXX XXXXXXXXXXXX
	Gauge pressure = bar	Gauge pressure " bar	mm
2572 + 1070D	0	0,22 0,32 0,70	9,7 - 9,8 10,5 - 10,8 12,2 - 12,3 13,1 - 13,2
2572 <sub>+</sub> 1072D	0	0,22 0,32 0,70	9,7 - 9,8 10,5 - 10,8 12,2 - 12,3 13,1 - 13,2

Set full-load delivery at control lever and manifold-pressure compensator (LDA). Then turn LDA-adjusting sleeve (for delivery quantity) 1/2 turn in the direction more control-rod travel.

WPP 001/4 KHD 6,1 h 4. Edition

En

PES 6 A 85 D 410 RS 2591

RS 325/1325 AOB 691 DL

9.82 supersedes KHD

company engine

BF 6 L 913 - BW 124 kW(169PS) 2650 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,50-2,60 (2.45-2.65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>4</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1325	12,8-12,9	9,0-9,1	0,3(0,45)			
325	8,4-8,6	0,9-1,5	0,2(0,4)			
	•			<u> </u>	<u> </u>	

Adjust the fuel delivery from each outlet according to the values in

R. Governor Settings

VH=Control lever

Vertical position Horizontal position

=40° =40°

D. GUI	GIIIOI (	20000	'		FH= <i>F</i>	iccelerat	o lever	HOT 121	Ullicai	pos i c ion
Upper rated speed rev/min  Degree of deflection of control of travel   mm rev/min		Intern	nediate rat	ed speed	Control- lever deflection	Lower	rated speed   Control rod   travel   mm	3 to	rque control Control rod travel mm	
of control lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0				FHca.21 VHmax.	325 100	8,5 min.10,0	325 1000	12,8-12,9 12,8-12,9
VHca.53		875 =11,8	4				400-425	= 6,0	850	12,9-13,1
② FH max	1575=0	445 = 4,0 ,3-1,7							500	12,9-13,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(A)	II-load stop	6 Rotational- speed limitat	33 Fu	iel delivery aracteristics	Starting f	uel delivery 5	4a Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes	Note. changed to .) rev/min 3	rev/min	cm³/1000 strokes	rev/min 6	cm <sup>9</sup> /1000 strokes 7	rev/min 8	travel mm 9
LDA 1335	0,7 bar 90,5-91,5 (88,5-93,5)	1365-1375* LDA 0 bar	LDA 1000 LDA 850	0,7 bar 85,0-88,0 (83,0-90,0) 0,7 bar 83,5-86,5 (81,5-88,5) 55,5-58,5	100	104,0- 114,0 = 17,8- 18,2 mmRW (Electro-	l .	(24 V)

Checking values in brackets

\* 1 mm less control rod travel than col 2

### D. Adjustment Test for Manifold Pressure Compensator

Test at n	500	rev/min decreasil PACKESIN XXXXX	Ypregause - in	bar gauge pressure		
Pump/governor		Setting		Measurement	Control rod trave	diminution difference
•		Gauge pressure	bar	Gauge pressure	bar mm (1)	
2591 +	691 D	0,7		0,430 0,160 0	12,7	- 13,1 - 12,8 - 12,3 - 11,7
:						

Hotes

(1) when n

rev/min and gauge pressure =

bar ( \* maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 h

4. Edition

estoil-ISO 4113

PE 6 A 95 D 410 LS2587 RQV 300-1150 AB1088L (1)
PE 8 A 95 D 410 LS2588 RQV 300-1150 AB1088L (2)
PE 10 A 95 D 610/4LS2589 RQV 300-1150 AB1047DL (3)
PE 12 A 95 D 610 LS2590 ROV 300-1150 AB1047DL (4)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

companK H D

engine: F 6 L 413 FW (1) (102kW~139 PS) (2) F 8 L (136kW-185PS)

(3) F10 L (170kW-231PS)

(4) F12 L (204kW-277 PS)

bei 2300 min<sup>-1</sup>

A. Fuel Injection Pump Settings

Port closing at prestroke (1,45-1,65) mm (from BDC)

Tunnelling or mining vehicles

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,0-9,2	7,8 - 8,0	0,3(0,6)			
300	6,2-6,3	1,4-2,0	0,3(0,5)			
800/1000		C, 4-5	0,4(0,7)		ĺ	
				}		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) 2587 mit 1088L

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Stiding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3		1
ca.68	1150 1350	15,2-17 0 - 1	,8		•	-	ca.11	300	min.7,5 5,9-6,1	300 600	1,2-1,3 3,1-3,4
ca.64		1190-120 1220-12		-			320-400 3 <b>9</b>		-670=2,0	1190	8,5

Torque control travel (, =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Foll-load d Control-ro Yest oil ter		Rotational-speed 20 limitation intermediate speed	Fuel delic		Starting Idle switchir	. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min 4	cm <sup>2</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm
1150	77,5 - 79,5 (75,5 - 81,5)	1190-1200*	800	80,5 - 82,5 (79,0 - 84,0)	100	119,0-129,0	800	9,0-9,1 9,5-9,6 9,5-9,6

Checking values in brackets

\* 1 mm less control rod travel than col 2

Cam sequence and angular cam spacing

$$1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 
0 - 15-60-75-120-135-180-195-240-255-300-315^{\circ}$$
(4)

Tolerance + 0,50 (+0,75)

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Stiding s	eeve travel
deflection	Control	Control rod (	(b)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel	G.,G.,,	0
of control lever	mm mm		(Za)	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	ww
11	2	3		4	5	6	7	8	9	10	11
max.	150	15,2-17	,8	•	•	-	ca.11	100 300	min.7,5 5,9-6,1 670 =2,0		1,2-1,3 3,1-3,4 8,5
ca.64	8,0 4,0 1350	1190-120 1220-125 0 - 1	50				320-400 3a			1130	0,0

Torque control travel a =

0,5<sub>mm</sub>

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem		Rotational-speed (2b) timitation intermediate speed	Fuel deliv	very characteristics 5a	Starting Idle switchin		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm\$/1000 strokes	rev/min 8	travel mm
1150	77,5-79,5 (75,5-81,5)	1190-1200*	800	80,5-82,5 (78,5-84,5)	100	119,0-129,0	800	9,0-9,1 9,5-9,6 9,5-9,6

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B.** Governor Settings

,		
Testoil	-ISO	4113

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed			Stiding st	eeve travel
	rev/min  Control	Control rod travel	(a)	Degree of deflection	ı	Control rod fravel	Degree of deflection	ı	Control rod travel			1
of control lever	rod travel	tes/win	23	of control	rev/min	mm 4	of control lever	rev/min	mm (	3)	rev/min	mm
1	2	3		4	5	6	7	8	9		10	11
max.	1150	15,2-17	,8	-	6-	-	ca.1i	300	min.7,5 6,2-6,	3	600	1,2-1,3 3,1-3,4
ca.64	8,0 4,0	1190-12 1230-12					330-410		-680=2,(	0	1190	8,5
	1350	0 - 1	,0				<b>3</b> a					

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem		intermediate speed	Fuel deliv high idle s	very characteristics 5a poeed 5b	Starting Idle switchin		Torque- travel	control 5 Control rod
rev/min	cm <sup>9</sup> /1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	83,0-86,0 (80,5-88,5)		116,5-126,5 (113,5-129,5) = 14,4-14,8 mm RW	500 895	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	ed	T	Lower rated	speed			Stiding s	eeve travei
Degree of deflection	Control	Control rod travel		Degree of deflection		Control rod travel	ŀ	Degree of deflection of control		Control r travel	od		0
of control lever	rodtravel mm	rev/min (	28)	of control lever	rev/min	mm (4	<b>`'</b>	lever	rev/min	ww	3	rev/min	mm
1,	2	3		4	5	6	_1:	7	8	9		10	11
max.	1190	15,2-17,	,8	-	•	-		ca.11		min.7 6,1-6			1,2-1,3 3,1-3,4 8,5
ca.64	8,1 4,0 1350		55				- 1	320-425 ③			-	1130	0,3

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full load de Control rod Test oil tem	stop	Rotational-speed (20) limitation intermediate speed	Fuel deliv high idle s	ery characteristics (5a)	Starting Idle switchin		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /7000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm3/1000 strokes 7	rev/min	travel mm 9
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	83,0-86,0 (80,5-38,5)	100	116,5-126,5 (113,5-129,5)	500 900	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

Testoil-ISO 4113

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection of control lever	rod travel	Control rod travel rnm rev/min	(a)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min	mm (1)
1	2	3	9	4	5	6	7	8	9	10	11
							3a				<u> </u>

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

		Rotational speed (2b) limitation intermediate speed (4a)		rery characteristics 5a peed 5b cm²/1000 strokes	ļ	fuel delivery 6 ng point cm²/1000 strokes	Torque- travel rev/min	Control 6  Control rod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	- Cm. \ 1000 200 Ke2	[	-		
1	2	3	4	5	6	/	8	9

Checking values in brackets

\* 1 mm less control rod travel than co!. 2

En

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 4,7 b 2. Edition

PES 5 A 80 D 410/3 RS 2579 RQV 300-1400 AB 1048 DL

supersedes 9.82

1 - 3 - 5 - 4 - 2 je  $72^{\circ} \pm 0.5$  ( $\pm 0.75$ )

company: KHD F 5 L 912

74 kW (101 PS) 2800 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

	. 7	Ĺ	l	travel		(torque-control valve)
rev/min 1	mm 2	cm³/100 strokes 3	cm³/ 100 atrokes 4	mm 2	cm³/100 strokes 3	mm 6
1400	11,4+0,1	6,1-6,2	0,2(0,35)			
300	8,9-9,1	1,0-1,6	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated spi	eed	Lower rated	speed		Slidino a	leeve travel
deflection of control	Control rod travel		(a) (2a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		l ①
lever 1	mm 2	rev/min 3	<u> </u>	lever 4		mm (4)		rev/min 8	mm (3 9	rev/min 10	mm 11
max.	1400	15,2-17	,8	-	•	•	ca.10	100	min.7,5	250	0-0,6
ca.60		1480-149 1710-170 0 - 1	40				390-490		15,9-6,1 max.1,0		2,9-3,1 5,0-5,3 5,9
			.,		İ	<u> </u>	<b>3</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min cm³/1000 strokes rev/min m rev/min m rev/min cm³/1000 strokes rev/min m rev/min m rev/min m rev/min cm³/1000 strokes rev/min m rev/mi	Full-load de Control-roc Test oil terr		Rotational-speed 2b limitation intermediate speed	Fuel delin high idle s	very characteristics (56)	Starting Idle switching		Torque- travel	control (5)
(61,0-65,0) (57,5-63,5) / 20,5-21,5 1075 11 750 56,5-58,5 mm RW 825 12	rev/min	cm³/1000 strokes .	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	tev/min	travel mm
(61,0-65,0) (57,5-63,5) / 20,5-21,5 1075 11 750 56,5-58,5 mm RW 825 12	1	2	3	4	5	6	7	8	9
(55,0-60,0)	1400		1480-1490*		(57,5-63,5)	100	/ 20,5-21,5	1075 825	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

WPP 001/4 KHD 6,1 k 2. Edition

PES 6 A 85 D 410/3 RS 2592

ROV 300-1250 AB 1089 L

supersedes company:

engine:

12.81 KHD

BF 6 L 913 118 kW /

2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	TOKO	(2.15-2.35) <u> </u>	mm (from BDC)		T	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1250	11 0.0 1	0.1.0.2	0 3/0 45	i		
1250	11,9+0,1	9,1-9,2	0,3(0,45)		<u> </u>	
300	7,2-7,4	0,9-1,5	0,2(0,4)			
	•					
				1	1	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Lipper rated	peed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection of control lever	Control rod travel	mm.	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3 9	rev/min	(1)
max.	1250 1500	15,2-17,8 0 - 1,0	-	-	-	ca.14	100 300	min.8,8 7,2-7,4	550	0,5-0,7 3,4-3,6
ca.68		1290-1300 1370-1400				370-450 30			1250	5,2-5,4 8,1

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten		Rotational-speed (20) Ilmitation Intermediate speed rev/min	high idle s	rery characteristics (5a) peed (5b) cm³/1000 strokes	Starting Idle switchin	ng point	Torque- travel rev/min	control (5) Control rod travel mm
LDA 1250	0,7 bar 90,5-91,5 (88,5-93,5)	3 1290-1300*	LDA 800 LDA 500	0,7 bar 85,5-88,5 (83,5-90,5) 0 bar 60,5-63,5 (58,5-65,5)	100	7 110,0-120,0 / 17,2-17,6 mm RW	500 800	9 11,9+0,1 12,3+0,1 12,3+0,1 12,1+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2



### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

KHD 6,1 k

Testoil-ISO 4113

	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 A RS2592	0,67		12,2 - 12,3
withAB 1089 L		Ó	11,2 - 11,3
		0,4	12,0 - 12,1
		0,28	11,3 - 11,5

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6.1 K 2

4. Edition

PES 6 A 85 D 410 RS 2592

ROV 300-1250 AB 1158 L

supersades9.83

Komb.-Nr. 0 400 546 497

company: KHD
engine BF 6 L 913
GMC-Fahrzou

GMC-Fahrzeug 118 kW (160 PS) / 2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,5+0,1	8,4-8,5	0,3 (0,45			
300	8,3-3,5	1,0-1,6	G,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Testoil-ISO 4113

Upper rated s	peed		Intermedi	ste rated sp	eed	Lower rated	speed	•	- Slidina s	leeve travel
deflection	rev/min Control	travel	Degree of deflection of control	•	Control rod travel	Degree of deflection of control		Control rod travel		0
1	rod travel mm 2	rev/min (	lever 4	rev/min 5	mm 4	lever 7	rev/min 8	mm 3 9	rev/min 10	mm 11
max.	1290	15,2-17,	8 -	-	-	ca.15	100 300	min.10,2 8,6-8,8		0,5-0,8 3,6-3,7
ca. 66	11,5 4,0 1500	1375-140	5			450-575		,		5,3-5,4 8,1
						<b>③</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (5e)	Starting idle switchir	. •	Torque- travel	control (5)
rev/min 1	cm³/1000 strokes	rev/min 4a 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6_	cm <sup>3</sup> /1000 strokes 7	rev/min B	travel mm
LDA 1250	0,7 bar 83.5-84.5	1290-1300*	LDA 800	0,7 bar 80,5-8 <i>2</i> ,5 (78,0-85, <b>0</b> )	100	102,0-112,0 (99,0-115,0) = 16,9-17,3 mm RW	500 <b>910</b>	12,5+0, 13,2+0, 13,0+0, 12,6+0,
	83,5-84,5 (81,5-86,5)		LDA 500	0 bar 59,0-6 1,0 (56, 5-63,5)		inin Kw	,	12,0.0,

Checking values in brackets

\* 1 mm less control rod travel than col 2

### D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 k 2 - 2 -

Testatin

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
EED + A. FS 2592	0,70		13,2 - 13,3
+ HQVAB 1156 L		ე	11,8 - 11,9
		0,48	12,8 - 12,9
		0,33	11,9 - 12,1
	7		

Notes

(1) when **n** 

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 6,1 k 1 3. Edition

PES 6 A 85 D 410/3 RS 2592

Komb.-Nr. 0 400 836 027

ROV 300-1250 AB 1158 L

supersedes

9.82 KHD company:

engine:

BF 6 L 913 GMC vehicle

118 kW (160 PS) / 2500 min-1

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	13,2+0,1	8,8-8,9	0,3(0,45)			_
300	8,7-8,9	1,0-1,6	0,2(0,4)			
	}					

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

Upper rated Degree of deflection of control lever	rev/min	Control rod travel mm rev/min 3	(1) (2)	Intermediate Degree of deflection of control lever	}	Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	Control rod travel mm 3	mm
max.	1250	15,2-17	,8	-	-	-	ca.15	min.10,3 8,7-8,9	0,5-0,8 3,6-3,7
ca.66	12,2 4,0 1500	1290-13 1380-14 0 - 1					350-450 3a		5,3-5,4 8,1

0,8 mm Torque control travel a =

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Tost oil ter		Rotational-speed 20 limitation intermediate speed	Fuel deliv	rery characteristics (5a)	Starting Idle switchir	_	Torque- travel	Control 6 Control roc travel
r <del>ev</del> /min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	<b>!</b>	3		<u> </u>		
LDA 1250	0,7 bar 87,5-88,5 (85,5-90,5)	1290-1300*	LDA 800	0,7 bar 89,5-92,5 (87,5-94,5)	100	118,5-128,5 / 17,8- 18,2 mm RW		13,2+0,1  14,0+0,1  13,8+0,1
LDA 1100	0,7 bar 87,5-90,5 (85,5-92,5)		LDA 500	0 bar 59,0-60,0 (57,0-62,0)			1130	13,3+0,3

Checking values in brackets

\* 1 mm less control rod travel then col. 2

11.83

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## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 6,1 k 3

4. Edition

PES 6 A 85 D 410/3 RS 2592 Komb.-Nr. 0 400 836 028

ROV 300-1250 AB 1188 L

company 6 L 913

engine 118 kW/2500 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at pres	stroke(	2,2-2,3 2_15-2_35)	mm (from BDC)			
Rotational speed		Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1250	12,0+0,1	8,9-9,0	0,3(0,5)			
300	6,9-7,1	0,9-1,5	0,25(0,4	5)		
<u> </u>						
	1					

Adjust the fuel delivery from each outlet according to the values in (

#### **B.** Governor Settings

Upper rated	peed			Intermediate	rated ap	eed	Lower rated	speed		Slidena	leeve travel
Degree of deflection	-	Control rod travel	(1)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		, ①
of control lever	rod travel	LGA/WID	29	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	revimin	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1290	15,2-17	,8	-	-	-	ca. 13	300	6,9-7,1	325 850	1,5-1,7 4,9-5,1
ca. 65	11,0	1290-13 1375-14					355-470		•	1150 1400	7,1-7,3
							39				

Torque control travel a = 0.8

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Centrol-ro Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel delin high idle s	rery characteristics (5e)	Starting Idle ewitchir	. •	Torque- travel	control 5
rev/min 1	cm³/1000 strokes	revimin 4e	rey/min 4	cm <sup>3</sup> /1 <b>000 st</b> r@es 5	rev/mia	cm <sup>3</sup> /1000 strakes 7	<i>fevim</i> in 8	travel mm 9
LDA 1250	0,7 bar 86,5-89,5 (86,5-91,5)	1290-1300*	LDA 800 LDA 500	0,7 bar 85,0-88,0 (83,0-90,0) 0 bar 59,0-61,0 (57,0-63,0)	100	110,0~120,0 (107,0-123,0 =17,1-17,5 mm RW	) 500 775	12,0+0, 12,8+0, 12,5+0, 12,1+0,

Chucking volues in brackets

\* 5 mm less control rod travel than col. 2-

- 2 -

### D. Adjustment Test for Manifold Pressure Compensator

rev/min decreasing pressure - in bar gauge pressure

KHD 6,1 k 3

300			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
050 - 1 05 0500	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2592 + RQVAB 1188 L	0,70	0 0,26 0,19	12,8-12,9 10,9-11,1 12,4-12,5 11,9-12,1
?			

Notes

(1) when n =

rev/min and gauge pressure =

bar (\* maximum full-load control rod travel)

Testoil-iSO 411

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 KHD 4.7 c 3. Edition

PES 5 A 80 D 410/3 RS 2603 Eomb.-Nr. 0 400 865 023

RS 325/1650 A O B 2087 L

supersedes3.83 company KHD engine F 5 L 912

54 kW (73 PS) 3000 min 1 A power output

All test specifications are valid for Bosch Fixel Injection Pump Test Benches and Testers

#### A. Fuel Injection Fump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm <sup>-</sup>	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1500	9,9-10,0	5,1 - 5,2	0,2(0,35)	)		
325	8,7-8,9	1,7 - 2,1	0,2(0,3)			
				}		
		1	İ			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lower	rated spe	ed	3 Tor	que control
Degree of deflection of control lever	rev/min	Control rod travet mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	•	-	-	VH max	325	8,8	-	-
						FHca.18	100 325	min.13,6 8,7-8,9		
<b>姓 ca.4</b> 9	8,9	1690-1700				İ	550-			!
(∰inax.	4,0	1740-1770	4			1	600	max.1,8	1	
<u> </u>	1900	0 - 1,0						<u> </u>		<u> </u>

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat.		ni delivery iracteristics	Starting Idle	fuel delivery	Sa Idio	stop
Test oil temp rev/min 1		Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7		Control rod travel mm 9
1490	50,5-51,5 (49,0-53,0)	1690-1700*	-	•	-	•	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 p

2. Edition

PE 8 A 95 D 410 LS 2608

ROV 300-1100 AB 1126 L

supersedes 9.82 KHD

Komb.-Nr. 0 400 648 128

•

company F 8 L 413 F 133 kW/2200 min-1

1-8-7-2-6-5-4-3 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	stroke	(1.95-2.15)	mm (from BDC)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	8,8-9,0	0,35(0,6			
300	5,9-6,1	0,9-1,9	0,35(0,5			
		<u> </u> 				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control fever 7	rev/min 8	Control rod travel mm 3	rev/min	ı ①
max.	1100	15,2-17	,8	-	-	-	ca. 14			250 520	1,1-1,3
ca. 44	8,5 4,0	1140-115	25				355-415	300			3,6-4,2 5,8-6,0 8,1
	1345	0-1,0	J				355-415 3e				

Torque control travel a = 0.6 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

	d stop np 40°C (104°F) 2	limitation intermediate appead	mitation high idle speed (50) Idle switching point		idle switching point		travel	Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	tev/min	mm .
<u> </u>	2	3	4	5	6	7	8	9
1100	88,0-90,0 (86,0-92,0)	1140-1150*	700	90,5-93,5 (88,0-96,0)	100	120,0-130,0 (117,0-133,0)	500 825	9,5-9,6 0,1+0,1 9,9+0,2 9,6-9,9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

leschäftsbareich KH. Kundendionst. Kfz-Ausrustung. : by Robert Bosch Gribh, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.

# Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 12,7 n 2. Edition

PE 8 A 95 D 410 LS 2609 RQV 300-1250 AB 1128 L Komb.-Nr. 0 400 648 129

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45 °  $^{+}_{-0,5}$  ° ( $^{+}_{-0,75}$  °)

companyKHD
engine BF 8 L 413 F
235 kW (320 PS)
2500 min -

estoil-150 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

	1	3	4	mm 2	cm <sup>3</sup> /100 strokes	mm 6
1250 11.	,6+0,1	11,6-11,7	0,3(0,6)			
300 5.	,9-6,1	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	speed			Intermediate	rated ap	eed	Lower rated	speed	•	Sliding s	leave travel
deflection	rev/min Control rod travel mm 2	trave:	(9) (29)	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Contred rod travel mm 3	rev/min 10	mm 11
max.	1250	15,2-17,	8	•	•	•	ca.11	100 300	min. 7,5 5,9-6,1		0,5-0,8 2.9-3.1
ca. 57		1290-130 1370-140 0 - 1,	0				380-550		1 3,3-0,2		1,7-4,9 7,7
							39				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (20) limitation intermediate speed	chate spend high idle speed (5b) Idle switching point				Torque- travel	Control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min B	travel mm
LDA 1250	0,7 bar 116,0-117,0 (114,0-119,0)	1290-1300 *	LDA 750 LDA 500	0.7 bar 121,0-124,0 (119,0-126,0) 0 bar 101,5-103,5 (99,5-105,5)		130,0-140,0 15,2- 15,6 mm R₩	750	11,6+0, 12,4#0, 12,1+0,

Checking values in brackets

\* 1 mm less control rad travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel difference mm (1)
PE 8 A LS2609 + AB 1128	0,27	0,7	12,1-12,2 12,4-12,5 11,7-11,8
			·

Notes

(1) when n

rev/min and gauge pressure = bar ( = maximum full-load control rod travel)

L16

WPP 001/4 KHD 1 g 6

supersedes 6.83

3. Edition

PES 4 A 85 D 410/3 RS 2610 1 - 3 - 4 - 2 je  $90^{\circ} \pm 0.5^{\circ}$  ( $\pm 0.75^{\circ}$ )

Komb.-Nr. 0 400 864 051

RSV 325-1150 A 8 B 2102 L

A 8 C 2102 L

company engine

KHD F 4 L 913

55 kW (75 PS)

D 7807 -Tractor S 16

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

2.50-2.60

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensic (torque-control v
rev/min 1	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes	mm
1150	11,3+0,	6,8 - 6,9	0,3(0,45			
325	8,7-8,9	0,9 - 1,5	0,25(0,4	5)		

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lowe	r rated spe	ed	3 To:	que control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	5	3	4	5	6	7	В	9	10	11
loose	800	0,3-1,0				ca.17	325	8,3	1150	1,3-11,4
, , ,	×	= 3,5					325	8.7 <b>-</b> 8.9	900 500	1,6-11,9
چې. 54 ق	1190- 1230- 1400 :	200 = 10,3 260 = 4,0 0,3-1,7	1				460-	8,7-8,9 20 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	pad stop	6 Rotational- speed limitat		el delivery aracteristics	Starting Idle	fuel delivery	Se Idi	ie stop	
Test oil tem rév/min 1	1 .	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1150	68,0 - 69,0 (66,0 - 71,0)	1190-1200*	500 800	57,5 - 59,5 (55,5 - 61,5) 64,5 - 66,5 (62,5 - 68,5)		•	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 1 g 5 1. Edition

En

PES 6 A 85 D 410/3 RS 2611

RSV 325-1150 A 8 B 2103 L (1)

supersedes KHD

Kcmb.-Nr. 0 400 866 107

(1200)

(2) company F 6 L 913

engine

(1) 81 kW / 2300 min<sup>-1</sup> DX 120-S 17

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(2) 84 kW / 2400 min-1 DX 120 - S 21

A. Fuel Injection Pump Settings

Port closing at prestroke

**Festoil-ISO 4113** 

2,5-2,6 (2,45-2,65)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm\$100 strokes	mm 6
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	8,8-9,0	1,1 - 1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of	r rated speed Control rod travel mm		late rated	speed	Control- tever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	<b>O</b>	rque control Control rod travel mm
loose	1	0,3-1,0 4,0	 •	-	ca.17	325 100	min.19,0	1150 870	11,6-11,8
ca.52		1190-1200 1225-1255 0,3 - 1,7			4	325 450-510	8,8-9,0  = 2,0	500	12,0-12,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ili-load stop	6 Rotational- speed limitat	30 FL	uel delivery naracteristics	Starting t	luel delivery 5	(4a) Idi		
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note. changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min	mm trassi 9	
(1) 1150	68,0-69,0 (66,0-71,0)	1190-1200*	800	63,5-65,5 (61,5-67,5)	100	119,5- 129,5 / 20,0	•	-	
(2) 1200	69,5-70,5 (67,5-72,5)		800	63,5-65,5 (61,5-67,5)		21,0 mmRW			

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.82

BOSCH

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 1 q 4

2. Edition

En

PES 6 A 85 D 410/3 RS 2611

RSV 325-1200 A0B 2148 L AOC 2148 L supersedes 9.82 KHD company

Komb.-Nr. 0 400 866 111

engine

F 6 L 913 tractor DX 120-S21

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

84 kW (114PS) 2400min-1

#### A. Fuel Injection Pump Settings

2,5-2,6 Port closing at prestroke (2,45-2,65)

നുന (from BDC)

Festoil-ISO 4113

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>2</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>9</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1200	11,3+0,1	6,9 - 7,0	0,3(0,45)			
325	8,4-8,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	er rated speed		Interme	diate rate	ed speed	(1)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel m/m	rev/min	Control rod travel mm 11
loose	800 x =	0,3-1,0 4,0	-	-	-	ca.30	325	8,5	1200 975	11,3-11,4 11,6-11,9
ca.54	10,3 4,0 1425	1240-1250 1315-1345 0,3-1,7					325 450-510	8,4-8,6 = 2,0**	500	11,8-11,9

The numbers denote the sequence of the tests idle-speed auxiliary spring at 2 mm control-rod travel.

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	11.36	uel delivery naracteristics	Starting I	uel delivery 5	4a idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm <sup>2</sup> /1000 strokes 2	Note. changed to ) rev/min 3	rev/min 4	cm <sup>9</sup> /1000 strokes 5	rev/min 6	লে <del>\$</del> 1000 strokes 7	rev/min	Control rod travel mm 9
1200	69,5-70,5 (67,5-72,5)	1240-1250*	800	63,5-65,5 (61 <sub>0</sub> 5-67,5)	-	<b>-</b>	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.84

L19

2

**Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 9,6 i

2. Edition

PE 6 A 95 D 410 LS 2621

RO 350/1250 AB 1148 L

supersedes

company:

9.82 KHD

1 - 6 - 5 - 4 - 3 - 2

engine:

F 6 L 413 F 125 kW (170 PS)

0 -75 -120-195-240-315° ±0,5° (±0,75°)

2500 min-1

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC)

Rotational speed	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	9,6-9,7	8,3-8,5	0,3(0,6)			
350	6,9-7,1	1,6-2,2	0,3(0,5)			
	1		- {	Į		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin	g of slider ck 1	Full-load s			cifications (4)	tdle spec Setting p	-		cifications (5)					
	Control rod	rev/min	Control red travel inm 4	Centrel red travel rrim 5	rev/min	rev/min 7	Control red travel rrim 8	rev/min 9_	Control rod travel mm 10	rev/min	travel			
550 VH	19,2-20,8 = 46°	550	20,0		1295-1310 1325-1355	350	7,0	410-	min.8,5 6,9-7,1 450=2,0 max.1,0	1250 550 910 990	9,6- 9,7 10,1-10,2 9,9-10,1 9,6- 9,9			

Torque-control travel on flyweight assembly dimension a = 0,25 mm

1295-1310 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	enivery on ontrol lever op, 40°C (104°F)	Control rod stop	Fuel deliv	Fuel delivery characteristics			uel delivery d Contral	
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes 5	re <sup>1</sup> 6	v/min	red travel cm <sup>3</sup> /1000 strokes:// mm 7	
1250	82,5-84,5 (80,5-86,5)	600	1000	85,0-88,0 (83,0-90,0) 84,0-87,0 (82,0-89,0)		100	119,0-129,0	

Checking values in brackets

## **Test Specifications** Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 9.6 i 1 2. Edition

PE 6 A 95 D 110 LS 2621 Komb.-Nr. 0 400 646 271

ROV 300-1250 AB 1195 L

supersedes 9. 95 company KHD F6L413F

141 kW /2500 min

1 - 6 - 5 - 4 - 3 - 2  $0.75 - 120 - 195 - 240 - 315^{\circ} \div 0.5^{\circ} (\div 0.75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4+0,	9,2-9,4	0,35(0,6)			
300	6,4-6,6	0,8-1,4	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	930	Lower rated	speed		Slidings	leeve travel
Degree of deflection of control lever	rev/min Control rod@ravel mm	mm		Degree of deflection of control lever	rev/min	I.	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
1 	2	3		4	5	6	ļ <sup>7</sup>	8	9	10	
max.	1270	15,2-17	8,	-	-	-	ca.15	100	min.8,0		0,7-0,9
ca.47	9,4 4,5	1290-13 1360-13						300 380-	16,4-6,6 440=2,0		3,5-3,9 6,2-6,6 9,2
							<b>3a</b> )				

0,4 mm Torque Control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2		Rotational-speed 2b timitation intermediate speed			Starting Idle switchli		Torque- travel	Control rod	
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
1250	91,5-93,5 (89,5-95,5)	1290-1300*	750	93,0-96,0 (90,5-98,5)	100	116,5-126,5 (113,5-129,5		10,8+0 10,6+0	

Chucking values in brackets

\* 1 mm less control rod travel than col 2

## Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o 3. Edition

En

Testoil-ISO 411

PES 6 A 95 D 410 RS 2625 Komb.-Nr. 0 400 876 305 RSV 325-1150 A8B 674 DL

supersedes 9.83

company

B F 6 L 913 B engine

Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
1,9 2,0
Port closing at prestroke (1,85-2,05)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min t	mm 2	cm³/100 strokes	cm³/ i00 strokes	mm 2	cm³/100 strokes	mm 6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6-2,2	0,3(0,5)			7
				,		

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

Upper rated speed			Intermediate rated speed			r rated spe	3 Torque control		
rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	travel	deflection of control lever	rev/min	travel mm	rev/min	travel
2	3	4	5	6	7	8	9	10	11
800	0,3-1,0	-	-	-	ca. 15	325	6,8	1150 500	11,4+0,
1						325	7 2-7 1	1000	11,8+0,
10,4	1190-1200 1265-1295	]					5 = 2,0		
	800 X =	Control rod travel   mm   3   800   0,3-1,0   X = 3,0   10,4   1190-1200   4,0   1265-1295	rev/min 2 Control rod travel  mm 3 Degree of deflection of control lever 4  800 0,3-1,0 - X = 3,0	Control rod travel   Degree of deflection of control lever   7		Control rod travel   Degree of deflection of control lever   Tev/min   2     Control rod travel   Degree of deflection of control lever   Tev/min   mm   6     Tev/min   mm   6     Tev/min   Tev/	Control rod travel   Degree of deflection of control lever   rev/min   2   3   4   5   Control rod travel     Degree of deflection of control lever   rev/min   6   7   8	Control rod travel   Degree of deflection of control lever   7   Ca. 15   325   6,8	Control rod travel   Control

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load stop				Starting fuel delivery Idle		(5a) tdle stop		
Test oil tem ev/min 1	p 40°C (104°F) cm³/1000 strokes 2	Note changed to crev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800 LDA 500	0,7 bar 83,0-86,0 (80,5-88,5) 0 bar 56,5 - 59,5 (54,5 - 61,5)	100	116,5-126,5 (113,5-129, = 15,9 - 16,4 mm RW	1	

Checking values in brackets

1 mm less control rod travel than coi

## D. Adjustment Test for Manifold Pressure Compensator

KHD 1 o

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

-2-

4113	
oil-ISO	1. J.
Testo	

Pump/governor	Setting	Measurement	diminution Control rod travel difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2625 with A8B 674 DL	0,7	0 0,36 0,2	12,2 - 12,3 11,1 - 11,2 11,9 - 12,0 11,1 - 11,3

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)